060-1 GPALS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SDS-GPALS

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Strategic Defense System - Global Protection Against Limited Strikes

2. (U) DoD Component: OSD

3. (U) Responsible Office and Telephone Number:
Ballistic Missile Defense Org.
Washington, D.C.
Washington, DC 20301-7100
MG GEN Malcolm O'Neill (Acting)
Assigned: February 1, 1993
AV 225-7060 COMM (703) 695-7000

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603214C (Shared), 0603215C (Shared), 0603216C (Shared), 0603217C (Share
PE 0603218C (Shared), 0603220C (Shared), 0603221C (Shared), 0603222C (Share
PE 0603223C (Shared), 0603744C (Shared), 0604220C (Shared), 0604225C (Share
MILCON:
PE 0604220C (Shared)

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MAY 20 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

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5. (U) Related Programs:
Upper Tier Theater Missile Defense System (UTTMDS)

6. (U) Mission and Description:
Global Protection Against Limited Strikes (GPALS) when fully implemented, will provide a capability to protect the United States, U.S. forces deployed overseas, U.S. power projection forces, and U.S. friends and allies against limited ballistic missile attacks of all ranges, irrespective of their source. These attacks could be accidental, unauthorized, or deliberate, and involve ICBMs, SLBMs or shorter range ballistic missiles from the old Soviet Union or other nations. One of the key elements of GPALS is the increased priority on theater missile defense. The GPALS system will detect and engage ballistic missiles in the boost/post-boost, midcourse, and terminal stages of their flight using a combination of space-based and surface-based sensors, weapons, and command and control. The exact allocation of functions will not be fixed until the overall system design is determined based on current research and competing element concepts. Additionally, the Missile Defense Act of 1991 directs the Department of Defense to develop for deployment by 1996 an ABM Treaty compliant ballistic missile defense system as the initial step toward deployment of an anti-ballistic missile system that is capable of providing a highly effective defense of the U.S. against limited attacks of ballistic missiles, and to pursue the development of advanced theater missile defense systems with the objective of deploying such systems by the mid-1990's.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In 1983 the President challenged the U.S. scientific community to investigate whether new technologies could be used to counter nuclear ballistic missiles. Shortly after this challenge, the President directed that an intensive analysis be conducted to identify the most promising technologies. The results of the Defensive Technologies (Fletcher) Study provided the basis for the initial actions to structure the technology content and management organization of the Strategic Defense Initiative (SDI) Program. In April 1984, the Secretary of Defense established the Strategic Defense Initiative Organization (SDIO) as a Defense Agency. As a result of the research, technical progress and successes in tests of evolving technologies, the Under Secretary of Defense for Acquisition in September 1987, approved the recommendation of the Defense Acquisition Board (DAB) for selected SDI concepts and technologies to enter the Demonstration/Validation phase of the defense acquisition process, Milestone I (for Phase I). The Phase I system was to be designed to deter and, if deterrence failed, disrupt a massive Soviet attack on the continental United States by intercepting and destroying a significant number of Soviet missiles and warheads. Continued technical progress and the changing nature of the threat

7a. (U) Program Highlights (Cont'd):

the United States will face in the 1990s and beyond has caused the SDI program to evolve to the SDS-GPALS program which is intended to accomplish the goal of providing effective defense against limited attacks for the U.S., and U.S. forces and allies and friends abroad. Thus, the SDS-GPALS System will satisfy previously stated valid military needs to protect against limited ballistic missile strikes as stated in the USCINCSPACE Operational Requirements for Phase I Strategic Ballistic Missile Defense. During the President's State of the Union address on 29 January 1991, he directed refocus of the SDI Program to "...provide protection from limited ballistic missile strikes, whatever their source." On 12 September 1991, an Acquisition Decision Memorandum (ADM) was signed by the Under Secretary of Defense (Acquisition) which authorized six Major Defense Acquisition Programs (MDAPs) for SDIO. These MDAPS were established based on an internal DOD "White Paper" which outlined SDIO's management strategy to USD(A) for these programs. On 5 December 1991, the President signed into law the FY 1992 Defense Authorization Act, which included the Missile Defense Act of 1991. The Missile Defense Act of 1991 directs that an implementation plan be provided to the Congress within 180 days of passage of the 1992 Authorization Act (Tentatively Jun 92). On January 28, 1992, an Acquisition Decision Memorandum was signed by the Under Secretary of Defense (Acquisition) providing authorization for Milestone I for the Upper Tier Theater Missile Defense System (UTTMDS). An initial UTTMDS Selected Acquisition Report (SAR) was submitted to Congress as of March 31, 1992.

b. (U) Significant Developments Since Last Report --
A Summit was held June 16-17, 1992 between President Bush and President Yeltsin at which time they agreed to work together and with their Allies and other interested States on the concept of Global Protection Against Strikes.

In July 1992, the Secretary of Defense sent to Congress his plan to implement the Missile Defense Act of 1991.

The Congress has endorsed developing space-based sensors for deployment. In this vein, Congress changed Brilliant Pebbles' role to follow-on technologies in research and develpoment from the limited defense system architecture.

As set forth in the 1991 Missile Defense Act and its amendment in the FY 1993 Defense Authorization Act, the Department is planning with Congressional approval to deploy the initial (UOES) elements of advanced theater missile defenses by the mid-1990s and to provide an option to deploy an Anti-ballistic Missile (ABM) Treaty compliant defense (UOES) located at a single site around the turn of the decade

7b. (U) Program Highlights (Cont'd):

as the initial step toward a highly effective defense of the United States.

SDS-GPALS will satisfy its mission requirements.

c. (U) Changes Since As Of Date --
In May 1993, Secretary of Defense Aspin announced the renaming of Strategic Defense Initiative Organization as the Ballistic Missile Defense Organization.

8. (U) Threshold Breaches:
An Acquisition Program Baseline has not been established. Nunn McCurdy unit cost reporting is not applicable for RDT&E-only pre-Milestone II SARs.

9. (U) Schedule:

a. (U) Milestones --

	Planning Estimate	Approved Program	Current Estimate
Milestone I SDS Phase I (DAB)	SEP 87	N/A	SEP 87
Milestone I GBR-SDS Phase I (DAB)	JUN 90	N/A	JUN 90
Milestone II (DAB)	TBD	N/A	TBD
Milestone III (DAB)	TBD	N/A	TBD
IOC	TBD	N/A	TBD

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:
Under Secretary of Defense for Acquisition Decision Memorandum, Subject: Strategic Defense Initiative (SDI) Program dated September 17, 1987 and Acquisition Decision Memorandum dated June 19,1990.

(U) Approved Program: None.

10. (U) Performance Characteristics:

a. (U) Performance --

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Control - Reaction Time Percent Outage Restoration within 10 mins	TBD	N/A	/ N/A	N/A	TBD
Detect - Identify by Booster Type & Track All Types of Reentry Vehicle	TBD	N/A	/ N/A	N/A	TBD
Engage - (First wave	TBD	N/A	/ N/A	N/A	TBD

(b)(1)

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* Denotes Non-APB data elements

b. (U) Previous Change Explanations --

Program restructure to comply with Missile Defense Act of 1991 has required the development of revised performance criteria.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:
Under Secretary of Defense for Acquisition Decision Memorandum, Subject: Strategic Defense Initiative (SDI) Program dated September 17, 1987 and Acquisition Decision Memorandum dated June 19,1990.

(U) Approved Program: None.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	20835.5	0.0	13138.2
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	42.2		71.8
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	20877.7	0.0	13210.0
Escalation	6754.7	0.0	4241.6
Development (RDT&E)	(6741.9)	(0.0)	(4220.1)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(12.8)	(N/A)	(21.5)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	27632.4	0.0	17451.6
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	0	N/A	N/A
Total	0	N/A	0

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:
Under Secretary of Defense for Acquisition Decision Memorandum, Subject: Strategic Defense Initiative (SDI) Program dated September 17, 1987 and Acquisition Decision Memorandum dated June 19,1990.

(U) Approved Program: None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	27577.4	0.0	55.0	27632.4
Previous Changes:				
Economic	-339.1	-	+0.1	-339.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3147.1	-	+27.4	-3119.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-3486.2	-	+27.5	-3458.7
Current Changes:				
Economic	-540.6	-	-2.0	-542.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-6192.3	-	+12.8	-6179.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-6732.9	-	+10.8	-6722.1
Total Changes	-10219.1	-	+38.3	-10180.8
Current Estimate	17358.3	-	93.3	17451.6

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	20835.5	0.0	42.2	20877.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2533.6	-	+20.9	-2512.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2533.6	-	+20.9	-2512.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5163.7	-	+8.7	-5155.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-5163.7	-	+8.7	-5155.0
Total Changes	-7697.3	-	+29.6	-7667.7
Current Estimate	13138.2	-	71.8	13210.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices and adjustment for a negative program change.

Estimating: Adjustment for Current and Prior Year Inflation Offset.
Increased Program Costs for a second Ground Based Interceptor and Theater Missile Defense requirements.
Deletion of Upper Tier Theater Missile Defense System (UTTMDS) for separate reporting.
Refinement of estimate associated with the Missile Defense Act of 1991.

13b. (U) Cost Variance Analysis (Cont'd):

MILCON
Economic: Revised Escalation Indices.
Estimating: Additional costs for facilities to support the restructured GPALS program.
Refinement of Planning and Design Requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-718.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+177.4
Adjustment for Current & Prior Inflation. (Estimating)	+5.5	+7.3
Congressional reduction and evolving cancellation of Ground Surveillance Tracking System (GSTS). (Estimating)	-86.0	-107.1
Congressional reductions to BMDO budget resulted in restructure and reduction of requirements to meet evolving missions. (Estimating)	-5083.2	-6092.5
RDT&E Subtotal	-5163.7	-6732.9
(2) MILCON		
Revised economic escalation indicies. (Economic)	N/A	-2.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1
Additional requirements for facility acquisition, environmental support and special studies for FY98 and FY99. (Estimating)	+8.6	+12.7
MILCON Subtotal	+8.7	+10.8

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) GSTS:	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Space, Huntington Beach, CA DASG60-88-C-0139, CPIF/AF Award: September 30, 1988 Definitized: September 30, 1988	$184.3	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$593.9	N/A	0	$593.9	$593.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.8	$-1.5
Cumulative Variances To Date (03/21/93)	$0.8	$-1.5
Net Change	$0.0	$0.0

Explanation of Change:

This contract was restructured to a level of effort. The contract is 99 percent complete.

This is the last time this contract will be reported in the SAR.

(U) SE&I:	Initial Contract Price Target	Ceiling	Qty
General Electric, Blue Bell, PA SDIO84-88-C-0020, CPAF Award: May 12, 1988 Definitized: May 12, 1988	$236.0	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$336.2	N/A	0	$336.2	$336.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.9	$-0.9
Cumulative Variances To Date (02/28/93)	$1.2	$-0.1
Net Change	$0.3	$0.8

Explanation of Change:

15. (U) Contract Information (Cont'd):
The favorable cost and schedule variance changes are the result of GE successfully completing contractual tasks within cost and schedule objectives. These variances have no impact on this contract or the program.

(U) GBI:
Lockheed Missiles, Sunnyvale, CA
DASG60-86-C-0014, CPIF/AF
Award: January 26, 1986
Definitized: January 26, 1986

Initial Contract Price		
Target	Ceiling	Qty
$468.0	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$648.9	N/A	0	$710.5	$710.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-87.8	$-0.3
Cumulative Variances To Date (02/28/93)	$-82.7	$-0.7
Net Change	$5.1	$-0.4

Explanation of Change:

The favorable cost variance and unfavorable schedule variance changes were the result of closing GBI Functional Technology Validations (FTV) efforts. The GBI (FTV) was $510.5M of the Estimated Price at Completion. The GBI (FTV) effort was completed. Upon the GBI (FTV) closing, the unfavorable cost variance has been funded.

This is the last time this contract will be reported in the SAR.

(U) ERINT:
Ling Temco Vought, Dallas, TX
DASG60-87-C-0031, CPIF
Award: April 10, 1987
Definitized: April 10, 1987

Initial Contract Price		
Target	Ceiling	Qty
$80.0	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$397.9	N/A	0	$397.9	$397.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-8.0	$-10.9
Cumulative Variances To Date (02/28/93)	$3.2	$-7.7
Net Change	$11.2	$3.2

15. (U) Contract Information (Cont'd):

Explanation of Change:

The cost and schedule variances are the result of contractor's work arounds to minimize schedule delays, forming tiger teams to address specific technical problems, adding staff and shift work to compensate for delays, and implementing risk reduction activities. There is no impact to this contract or program.

(U) PRE-EMD BRILLIANT PEBBL:	Initial Contract Price Target	Ceiling	Qty
MARTIN MARIETTA, DENVER, CO SDIO84-91-C-0017, CPAF Award: May 24, 1991 Definitized: May 24, 1991	$318.7	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$483.5	N/A	0	$445.0	$445.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.8	$-2.2
Cumulative Variances To Date (02/28/93)	$0.0	$0.0
Net Change	$0.8	$2.2

Explanation of Change:

The cost and schedule variances were the result of replan efforts for this contract. This contract is undergoing a restructure. A rescission in FY93 and a major reduction in FY94 funding has necessitated a change from demonstration/validation type work to system technology demonstration contract effort. Because of this very significant change in contract structure and funding, the cost and schedule variances are invalid for performance assessment.

This is the last time this contract will be reported in the SAR.

(U) PRE-EMD BRILLIANT PEBBL:	Initial Contract Price Target	Ceiling	Qty
TRW, Inc., Redondo Beach, CA SDIO84-91-C-0020, CPAF Award: May 24, 1991 Definitized: May 24, 1991	$340.5	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$443.9	N/A	0	$432.3	$435.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.1	$0.0
Cumulative Variances To Date (02/28/93)	$-2.0	$-2.9
Net Change	$-0.9	$-2.9

Explanation of Change:

The cost and schedule variances were the result of replan efforts for this contract. This contract is undergoing a restructure. A rescission in FY93 and a major reduction in FY94 funding has necessitated a change from demonstration/validation type work to system technology demonstration contract effort. Because of this very significant change in contract structure and funding, the cost and schedule variances are invalid for performance assessment.

This is the last time this contract will be reported in the SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 33.3% (6 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 22.9% ($4001.6 / $17451.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY88-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2005)	Total
RDT&E	3973.3	919.4	1460.7	11004.9	17358.3
Procurement	-	-	-	-	-
MILCON	28.3	8.3	15.4	41.3	93.3
O&M	-	-	-	-	-
Total	4001.6	927.7	1476.1	11046.2	17451.6

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0400 RDT&E, Defense Agencies								
1988				143.6	147.5	147.5	147.5	3.0
1989				161.2	171.9	171.9	169.3	4.2
1990				275.7	306.2	306.2	204.2	4.0
1991				690.1	794.8	794.8	782.6	4.3
1992				1214.0	1437.0	1397.9	842.5	2.8
1993				921.2	1115.9	1003.5	124.3	2.4
1994				741.6	919.4			2.4
1995				1152.0	1460.7			2.3
1996				1058.0	1371.7			2.3
1997				811.1	1074.8			2.2
1998				873.0	1182.2			2.2
1999				940.8	1302.0			2.2
2000				1351.0	1910.9			2.2
2001				1197.0	1730.4			2.2
2002				633.7	936.2			2.2
2003				445.8	673.1			2.2
2004				286.8	442.6			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)								
2005				241.6	381.0			2.2
Subtot				13138.2	17358.3	3821.8	2270.4	
Appropriation: 0500 Military Construction,Defense Agencies								
1991				9.6	11.4	11.4	10.8	4.3
1992				9.2	11.2	11.2	8.9	2.8
1993				4.6	5.7	2.8	1.8	2.4
1994				6.5	8.3			2.4
1995				11.8	15.4			2.3
1996				8.8	11.7			2.3
1997				8.0	10.9			2.2
1998				7.3	10.2			2.2
1999				6.0	8.5			2.2
Subtot				71.8	93.3	25.4	21.5	
Grand Total				13210.0	17451.6	3847.2	2291.9	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

b. (U) Not applicable for Pre-Milestone II programs.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Not applicable for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

92-043

A-17 LASER HELLFIRE

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FINAL

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: HELLFIRE

AS OF DATE: December 31, 1992

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AS AMENDED
MAY 26 1993 5

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):** Laser HELLFIRE - subsystem of the AH-64 APACHE Weapon System

2. (U) **DoD Component:** Army

3. (U) **Responsible Office and Telephone Number:**

PROJECT MANAGER
AIR-TO-GROUND MISSILE SYSTEMS
ATTN: SFAR-MSL-HD
RSA, AL 35898-5610

COL CHARLES W. GREER
Assigned: February 3, 1992
AV 746-1365 COMM (205) 876-1365

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 23747 Project D045
PE 23802 Project D045
PE 64310 Project D074

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[redacted]

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 2032 ICN SSN C70100 (Army)
APPN 2032 ICN SSN C70200 (Army)

5. (U) Related Programs:
AH-64 Apache Helicopter; OH-58D Kiowa Warrior Helicopter; Ground/Vehicular Laser Locator Designator; High Mobility Multipurpose Wheeled Vehicle (HMMWV); Improved TOW Vehicle (ITV); Navy AH-1W Helicopter; Longbow HELLFIRE.

6. (U) Mission and Description:
HELLFIRE is an air-to-ground missile system designed to defeat individual hardpoint targets and minimize exposure of the delivery vehicle to enemy fire. The missile configuration has the capability for modular seeker replacements. The present production missile utilizes a laser seeker and has an improved HELLFIRE warhead (IHW) which provides greater lethality against near-term threat armor. Designated the interim HELLFIRE missile, it is seven inches longer and seven pounds heavier than the original production configuration. Development of an optimized version, HELLFIRE II (formerly HOMS), is nearing completion which will provide hardening of the laser seeker against countermeasures, further warhead improvements, replacement of the mechanical fuze with an electronics fuze, and a return to the original HELLFIRE length and weight. A version utilizing a radar frequency seeker, Longbow HELLFIRE (separate SAR), is in engineering and manufacturing development. Laser HELLFIRE and Longbow HELLFIRE are complementary and neither missile replaces another missile system in the air-to-ground role.

Laser HELLFIRE is employed on the AH-64 Apache helicopter as the primary point target weapon and also on the Navy AH-1W. The OH-58D Kiowa Warrior helicopter, configured to employ Laser HELLFIRE, was fielded in Feb 92. The system has also been qualified for use on the UH-60 Black Hawk helicopter. Demonstrations of Ground Launched Laser HELLFIRE have been conducted on the High Mobility Multipurpose Wheeled Vehicle and the Improved TOW Vehicle. The Government of Sweden has adapted the Laser HELLFIRE missile for a coastal defense role.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The Advanced Development (AD) Program was initiated in 1972 and on 30 Mar 76, DOD approved entry into full-scale engineering development of HELLFIRE with fielding to be concurrent with the Apache Helicopter (AH-64). Approval for full-scale production of Laser HELLFIRE was granted on 29 Mar 82. During the first (FY 82) and second (FY 83) production buys, seekers were procured from Martin Marietta Orlando

7a. (U) Program Highlights (Cont'd):

Aerospace (MMOA) and provided to Rockwell International Corporation (RIC) as government furnished equipment (GFE) for assembly into all-up-rounds. Dual source competition with a split of the award quantity was the acquisition strategy from FY 84 through FY 89. After competition between the two sources, the total quantity in FY 90 was awarded to RIC on 7 Mar 90, with firm-fixed-price options for FY 91 and FY 92. A warhead development program to improve warhead lethality against near-term threat armor was completed Jan 90 and the improvement was cut-in to production with the FY 90 buy. The first interim HELLFIRE missiles were delivered in Sep 91, 5 months ahead of the FY 90 contract schedule. HELLFIRE II was also competed between the two sources and the development contract was awarded to Martin Marietta on 2 Mar 90 with not-to-exceed ranged missile production options for FYs 93, 94, 95 and 96.

b. (U) Significant Developments Since Last Report --
A contract for initial production facilitization of HELLFIRE II was awarded to Martin Marietta Corporation on 30 Nov 92. The contract requires initial production facilities and performance of production qualification tests.

The Laser HELLFIRE Missile System is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --
The timing problem which surfaced late during development testing of the HELLFIRE II missile is now resolved. Live fire testing of HELLFIRE II was completed 24 Feb 93. As part of the live fire testing program a HELLFIRE II missile was flown against a full-up vehicular target at Eglin Air Force Base, FL on 27 Jan 93. The target was defeated. Warhead timing was within specifications and all other flight parameters were nominal. The production decision for HELLFIRE II is scheduled for May 93.

8. (U) Threshold Breaches:
There are no breaches to the approved Acquisition Program Baseline (APB), 5 Oct 92. There are no Nunn/McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Advanced Development			
Start	DEC 72	N/A	DEC 72
Complete	OCT 75	N/A	OCT 75
Milestone II	FEB 76	N/A	FEB 76
Operational Test (OT) (COBRA)			
Start	AUG 79	N/A	AUG 79
Complete	DEC 79	N/A	DEC 79
Milestone IIIA	NOV 81	N/A	NOV 81
Milestone III Decision Review	FEB 80	MAR 82	MAR 82
TRADOC FUE	N/A	DEC 85	DEC 85
FORSCOM FUE	N/A	MAY 86	MAY 86
Initial Operational Capability (IOC) (on AH-64)	MAY 83	JUL 86	JUL 86
USAREUR FUE	N/A	JAN 87	JAN 87
National Guard FUE	N/A	NOV 87	NOV 87
Contract Award - HELLFIRE Optimized Missile System (HOMS)	N/A	JUL 89	JUL 89
ECP Available - Interim Warhead	N/A	JAN 90	JAN 90
First Production Contract Award (FY 90 Buy) Interim Warhead Missile	N/A	MAR 90	MAR 90
HOMS Critical Design Review Completed	N/A	APR 91	APR 91
First Production Delivery (FY 90 Buy) Interim Warhead Missile	N/A	FEB 92	SEP 91
HOMS Qualification Test			
Start	N/A	FEB 92	FEB 92
Complete	N/A	APR 92	JUL 92
First Production Contract Award (HOMS)	N/A	MAY 93	MAY 93(Ch-1)
Production Qualification Test			
Start	N/A	JUL 94	JUL 94(Ch-1)
Complete	N/A	NOV 94	NOV 94(Ch-1)
First Production Delivery (HOMS)	N/A	DEC 94	DEC 94(Ch-1)

NOTE: FMS Cases do not affect schedule milestones.

b. (U) Previous Change Explanations --

The program experienced an accumulation of approximately 2 years in schedule slippage during full-scale development. Schedule changes resulted from reduction of RDT&E funding, delays in procurement funding and delays in testing caused by late delivery of hardware and correction of deficiencies revealed in earlier tests. The completion of production validation testing was delayed 6 months because of problems that occurred in production start-up. The current estimate for initial operational capability (IOC) was changed to Jul 86 to

9b. (U) Schedule (Cont'd):
reflect the actual date that IOC was achieved on AH-64. The following historical milestones were deleted after they were no longer applicable: Competitive AD Contracts - Start/Complete, ED Contract Award, PQT-C (Contractor) - Start/Complete, Production Contract Award, Prod Val Tests Complete, Full-Scale Production, and Missile Fly-to-Buy(FTB) Lot Acceptance Test Start (FY 84 Buy). DAE Baseline, Apr 89, elements were added: TRADOC/FORSCOM/USAREUR/ National Guard FUE, Contract Award - Interim Warhead/Optimized Msl, ECP Avail - Interim Warhead/Optimized Msl, FY 89-96 Contract Award, First Del FY 88-96. Change Explanations (1989): First delivery (FY 90 Buy was projected to be delayed 6 mos to Feb 92 due to delays in completion of the interim warhead development program (2 mos) and first article test (FAT) (4 mos) required to introduce the interim warhead into the FY 90 Buy. Change Explanations (1990): The following milestones were no longer applicable and were deleted: Contract Award - Interim Warhead, FY 89, 91, 93, 94, 95, & 96 Msl Contract Award, First Delivery (FY 88, 89, 91, 93, 94, 95 & 96), and ECP Available - Optimized Msl. The following AAE Acquisition Program Baseline, 4 Feb 91, elements were added: HOMS Critical Design Review Completed, HOMS Qualification Test Start and Completion and First Article Test (HOMS) Start and Completion. FY 90 Missile Contract Award, Apr 90, was changed to Mar 90 to reflect date of actual accomplishment. First Production Delivery (FY 90 Buy) current estimate was changed to Oct 91, which was 4 mos ahead of the contract schedule. Funding decisions caused changes to the acquisition strategy delaying FY 92 Missile Contract Award from Apr 92 to Jun 92 (2 mos) and slipped First Production Delivery (FY 92 Buy) from Sep 93 to Jun 94 (9 mos). Change Explanations (1991): First Production Delivery (FY 90 Buy) Interim Warhead Missile, Oct 91 is changed to Sep 91 to reflect actual accomplishment. Change Explanations (1992): HOMS Qualification Test Completed, Apr 92 was slipped to May 92 due to technical problems and was actually completed in Jul 92. First Production Contract Award (FY 92 Buy) HOMS (LRIP), Jun 92, and First Production Delivery (FY 92 Buy), Jun 94, are no longer applicable. Due to a warhead timing anomaly which surfaced during development testing, a decision was made not to award an LRIP contract.

c. (U) Current Change Explanations --

(Ch-1) First Production Contract Award (HOMS), May 93, First Production Delivery (HOMS), Dec 94, and Production Qualification Test, Start, Jul 94 and Complete, Nov 94 were added to reflect the decision to not proceed into full-scale production of the HELLFIRE II (HOMS) missile until the warhead timing anomaly was solved.

9d. (U) **Schedule (Cont'd):**

d. (U) References --

(U) Development Estimate:
DCP #118, 12 Nov 76.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 05 October 1992.

10. (U) **Performance Characteristics:**

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Maximum Range, Direct Fire (km)	5.0	5	/ 5	7.0	7.0
Maximum Range, Indirect Fire (km)	N/A	8	/ 6.5	8.0	8.0
Minimum Range, Direct Fire					
Basic Configuration (km)	.50	.59	/ .59	.59	.59
Interim	N/A	1.5	/ 1.5	1.5	1.5
Optimized	N/A	.5	/ .59	.6	.5
Time of Flight, 3km (sec)	13	10	/ 13	9.6	9.6
Time of Flight, 5km (sec)	20	22	/ 22	18.1	18.1
Missile Reliability (In Flight)					
Basic Configuration	.92-.95	.95	/ .89	.97	.97
Interim	N/A	.95	/ .92	.98	.98
Optimized	N/A	.95	/ .92	.85	.95
Launcher Reliability	.95-.99	.99	/ .95	1.0	.95-.99
Probability of Hit	[redacted]				

(b)(1)

Classified in accordance with SCG for production missile.

Probability of hit is in the direct fire mode, given reliability. The values shown for stationary and moving targets represent the performance of the HELLFIRE II missile and takes into consideration the use of EOCM's. The probability of hit for Basic HELLFIRE and

10a. (U) Performance Characteristics (Cont'd):
Interim HELLFIRE missiles would be reduced when EOCM's are present.

Demonstrated performance for the Interim and Basic missile reliability reflects performance of fly-to-buy missiles fired through 31 Dec 92. Demonstrated performance for the HELLFIRE II missile reliability is a point estimate at the end of development which is on a reliability growth curve that leads to a value which exceeds the threshold value in production.

b. (U) Previous Change Explanations --

The current estimate for missile weight for the original configuration was raised to 99.8 pounds when it became evident that the 95 pound weight requirement could not be achieved. The current estimate for minimum range was changed to 0.59 km and the current estimate for maximum range was changed to 7.0 km after completion of engineering development testing. DAE Baseline, Apr 89, added the element Missile Range Max (Indirect Fire). AAE Acquisition Program Baseline, 4 Feb 91, added elements for the Interim and Optimized Missile as follows: Minimum Missile Range (Direct Fire) and Missile Reliability (In-flight). To reflect a more representative estimate, the basis for the current estimate for missile reliability was changed from performance based on the last 50 fly-to-buy (FTB) missiles fired to cumulative performance of all FTB missiles fired through the date indicated. Missile reliability previously reported, which used the prior basis, was .92 - .95; reliability using the current basis is .98. Current estimate for Time of Flight, 3km, was changed from 13 seconds to 9.6 seconds to reflect demonstrated performance. Current estimate for Basic and Interim Missile Reliability was changed to .97 and .98 respectively to reflect demonstrated performance. Current estimate for Missile Weight of the Interim HELLFIRE Missile was changed from 108 lbs to 107 lbs to reflect actual achievement.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DCP #118, 12 Nov 76.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 05 October 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	211.9	291.7	290.7
Procurement	276.7	717.7	714.6
Missile Bus	(143.1)		(693.7)
Laser Seeker	(109.4)		(0.0)
Total Flyaway	(252.5)		(693.7)
Other Wpn Sys Cost	(4.0)		(13.2)
Peculiar Support	(0.0)		(4.6)
Initial Spares	(20.2)		(3.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	488.6	1009.4	1005.3
Escalation	214.8	1382.1	1363.3
Development (RDT&E)	(54.3)	(169.0)	(167.1)
Procurement	(160.5)	(1213.1)	(1196.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	703.4	2391.5	2368.6

(1) Other weapon system cost includes data, training, support and test equipment.
(2) Missiles are being procured as all-up-rounds. Seekers were not procured as a GFE item after the second buy.
(3) Launcher procurement funds ($31.7M), previously in the HELLFIRE DE, were transferred to the APACHE program in the Jun 84 SAR.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	24600	46175	45007
Total	24600	46175	45007

(1) There are 333 R&D units (including 60 for HELLFIRE II) being procured that are not considered fully configured end items.
(2) The Marine Corps is procuring 9,565 missiles which are not included above. Also not included are 1,800 missiles being procured with Special Defense Acquisition Funds (SDAF).

c. (U) Foreign Military Sales/International Cooperative Programs -- The following foreign military sales (FMS) cases have been implemented: Israel (IS-XZN), implemented 13 Mar 90 for $224.344M; Egypt (EG-ULB), implemented 24 Sep 90 for $435.387M; Saudi Arabia (SR-JBN), implemented 5 Feb 91 for $318.595M; Sweden (SW-VQZ), implemented 25 Apr 91 for $.242M; Taiwan (TW-JAL), implemented 31 Jul 91 for $158.519M; Taiwan (TW-JAR), implemented 30 Oct 91 for $5.088M;

11c. (U) Total Program Cost and Quantity (Cont'd):
and Taiwan (TW-YQH), implemented 13 Nov 91 for $19.787M. Note estimated cost of case for Israel, Egypt, Saudi Arabia and Taiwan (TW-JAL) also include aircraft cost. A co-production agreement with the Government of Sweden was signed, Apr 87, for an estimated value of $60M.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DCP #118, 12 Nov 76.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 05 October 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2368.6	2398.8	2368.6
(2) Quantity	45007	46175	45007
(3) Unit Cost	0.053	0.052	0.053
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	82.9	82.9	92.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	82.9	82.9	92.5
(2) Quantity	1781	1781	1785
(3) Unit Cost	0.047	0.047	0.052

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	266.2	437.2	0.0	703.4
Previous Changes:				
Economic	+8.8	+131.8	-0.4	+140.2
Quantity	-3.5	+438.6	-	+435.1
Schedule	+14.6	+638.2	+0.4	+653.2
Engineering	+150.3	+558.3	-	+708.6
Estimating	+14.7	-297.6	-	-282.9
Other	-	-	-	-
Support	+7.1	+24.3	-	+31.4
Subtotal	+192.0	+1493.6	-	+1685.6
Current Changes:				
Economic	-0.3	-12.9	+0.4	-12.8
Quantity	-	-32.0	-	-32.0
Schedule	-	-2.4	-0.4	-2.8
Engineering	-	-	-	-
Estimating	-0.1	+33.2	-	+33.1
Other	-	-	-	-
Support	-	-5.9	-	-5.9
Subtotal	-0.4	-20.0	-	-20.4
Total Changes	+191.6	+1473.6	-	+1665.2
Current Estimate	457.8	1910.8	-	2368.6

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	211.9	276.7	0.0	488.6
Previous Changes:				
Quantity	-2.7	+173.1	-	+170.4
Schedule	+9.1	+94.6	-	+103.7
Engineering	+67.8	+185.5	-	+253.3
Estimating	+1.4	-10.7	-	-9.3
Other	-	-	-	-
Support	+3.2	-1.4	-	+1.8
Subtotal	+78.8	+441.1	-	+519.9
Current Changes:				
Quantity	-	-10.4	-	-10.4
Schedule	-	-1.4	-	-1.4
Engineering	-	-	-	-
Estimating	-	+10.5	-	+10.5
Other	-	-	-	-
Support	-	-1.9	-	-1.9
Subtotal	-	-3.2	-	-3.2
Total Changes	+78.8	+437.9	-	+516.7
Current Estimate	290.7	714.6	-	1005.3

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Decrease due to deletion of 12 practice missiles; changes in seeker quantity.

Schedule: Increase due to budget reduction and slips in the validation test schedule.

Engineering: Increase due to addition of competitive low cost seeker program, autopilot improvements, and inclusion of improvement program.

Estimating: Increase due to exercise of the metric option in the contract, additional effort for shelf life surveillance, CM/CCM analysis, and hardware improvements. Increase due to revised HELLFIRE II

13b. (U) Cost Variance Analysis (Cont'd):

estimate.

Support: Decrease due to reduction in missile test requirement and budget adjustment. Increase due to addition of two Airborne Target Acquisition and Fire Control System (ATAFCS) for use in DT/OT with Cobra, requirement for battlefield obscuration test, and requirement for use of AN/USM-410 test set. Increase for Congressional interest item for training missile demonstration.

Procurement

Economic: Revised escalation indices.

Quantity: Addition of 34,625 missiles and reduction of 13,050 missiles.

Schedule: Re-profiling of missile procurement schedule. Increase due to delays in start of production and impact of RDTE funding constraints. Program stretchout resulting from zeroing FY 87 procurement funds precipitated by production delays. Stretch in Army schedule to end production in FY 98. Change in schedule to end production in FY 95 and decrease from 2790 to 112 missiles in FY 92. Increase from 3002 to 5511 missiles in FY 91 and a decrease from 2543 to 2158 in FY 93.

Engineering: Increase due to requirement changes in missile bus, warhead, seeker and incorporation of the minimum smoke motor. Increase due to changes in improvement program to reflect optimized missile.

Estimating: Change in estimating methodology. Revised production cost estimates. The major increases occurred prior to FY 84. Cost estimates decreased with introduction of competitive procurement strategy in FY 84. Revised estimates for outyear production costs based on actuals to date. Decrease in FY 88 due to Navy proration. Change in estimating methodology to not-to-exceed contract prices for all-up-rounds in FY 90. Increases due to adjustment for current and prior year inflation. Decrease in FY 90, FY 91, and FY 92 funding for HELLFIRE II production.

Support: Increase in other weapon system cost for an additional 10,000 deicing kits, 100 dummy missiles, and 30 training missiles to support APACHE program. Addition of 245 dummy and training missiles. Decrease in initial spares due to change in spares requirements. Increase in peculiar support for 12 test program sets.

13b. (U) Cost Variance Analysis (Cont'd):

MILCON

Economic: Revised escalation indices.

Schedule: Increase due to 1 year schedule slip in construction of ammunition storage bunkers.

Estimating: Ammunition storage bunkers added to the development estimate prior to FY 86 were determined not to be HELLFIRE system specific in FY 86 and were deleted.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.2
Revised HELLFIRE II estimate. (Estimating)	-0.1	-0.3
RDT&E Subtotal	--	-0.4
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-9.7
Economic adjustment for Negative Program Change. (Economic)	N/A	-3.2
Variance associated with decrease of 1168 units.	-11.8	-36.5
Quantity variance resulting from decrease of 1168 units. (Quantity)	-10.4	-32.0
Schedule variance associated with quantity decrease. (Schedule)	-1.4	-4.5
Change in procurement buy schedule in FY 91, FY 92, FY 93, FY 94 and FY 95. (Schedule)	--	+2.1
Adjustment for current and prior inflation. (Estimating)	+1.2	+4.1
Change in learning curve in FY 95 due to small quantity no longer in range of the not-to-exceed contract prices for the all-up-round. (Estimating)	+9.3	+29.1

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for current and prior inflation. (Support)	--	+0.2
Decrease in peculiar support of 4 test program sets. (Support)	-1.6	-4.8
Elimination of fielding support cost in FY 96 and FY 97. (Support)	-0.3	-1.3
Procurement Subtotal	-3.2	-20.0
(3) MILCON		
Correction of previous change categories in 31 Dec 86 SAR. (Economic)		+0.4
MILCON determined not to be system specific; schedule variance should have been deleted. (Schedule)		-0.4
MILCON Subtotal	--	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.029	0.003	-0.004	0.014	0.016	-0.006	--	0.001	0.024	0.053

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) Optimized Missile - MMC:	Initial Contract Price Target	Ceiling	Qty
Martin Marietta Corp, Orlando, FL DAAH01-90-C-0323, CPIF Award: March 2, 1990 Definitized: September 11, 1990	$40.6	$0.0	60

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$40.6	$0.0	60	$66.9	$66.8

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-22.3	$-0.2
Cumulative Variances To Date (12/31/92)	$-25.5	$0.0
Net Change	$-3.2	$0.2

Explanation of Change:

The primary reason for the cost growth is due to problems encountered late in the missile flight test program which caused the development program to be extended.

b.(U) Procurement --

(U) MSL 8TH PRODUCTION - RIC:	Initial Contract Price Target	Ceiling	Qty
ROCKWELL INTERNATIONAL, DULUTH, GA			
DAAH01-90-C-0161, FFP	$125.8	N/A	3766
Award: March 7, 1990			
Definitized: March 7, 1990			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$335.8	N/A	8942	$335.8	$335.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Quantity includes 2304 missiles for the FY 90 procurement, 1000 missiles deferred from the FY 88 procurement, 462 missiles deferred from the FY 89 procurement, 3002 missiles for the FY 91 procurement and 2174 missiles for the FY 91 supplemental.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 91.7% (22 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 93.2% ($2207.4 / $2368.6)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY72-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	454.7	3.1	-	-	457.8
Procurement	1752.7	92.5	65.6	-	1910.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2207.4	95.6	65.6	-	2368.6

The Marine Corp is procuring 9,565 missiles and 1,800 missiles are being procured with Special Defense Acquisition Funds (SDAF) not included above.

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1972			5.9	5.9	4.9	4.9	4.9	4.6
1973			5.8	5.8	5.0	5.0	5.0	4.3
1974			6.5	6.5	6.1	6.1	6.1	8.0
1975			13.6	13.6	14.0	14.0	14.0	10.9
1976			3.7	3.7	4.0	4.0	4.0	6.6
197T			0.6	0.6	0.7	0.7	0.7	2.9
1977			16.6	16.6	19.1	19.1	19.1	2.6

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1978			41.4	41.4	51.4	51.4	51.4	6.8
1979			47.5	47.5	65.7	65.7	65.7	8.4
1980			38.2	38.2	57.5	57.5	57.5	10.6
1981			26.3	26.3	43.6	43.6	43.6	10.6
1982			11.3	11.3	20.0	20.0	20.0	7.6
1983			8.3	8.3	15.2	15.2	14.3	4.9
1984			0.8	0.8	1.5	1.5	1.5	3.8
1985			0.3	0.3	0.5	0.5	0.5	3.4
1986			2.3	2.3	4.7	4.7	4.7	2.8
1987			4.4	4.4	9.2	9.2	9.2	2.7
1988			9.8	9.8	21.1	21.1	21.1	3.0
1989			6.6	6.6	14.8	14.8	14.6	4.2
1990			12.3	12.3	28.6	28.6	28.3	4.0
1991			16.9	16.9	41.1	41.1	37.8	4.3
1992			8.6	8.6	21.3	18.1	16.9	2.8
1993			1.8	1.8	4.7	0.2	0.1	2.4
1994			1.2	1.2	3.1			2.4
Subtot			290.7	290.7	457.8	447.0	441.0	

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2032 Missile Procurement, Army								
1981		11.7		11.7	23.3	25.0	25.0	11.6
1982	680	9.0	37.5	49.4	109.1	123.0	120.6	14.3
1983	3971		100.9	102.4	243.3	255.2	254.4	9.0
1984	4651		85.8	88.2	214.9	213.8	213.0	8.0
1985	5780		84.4	86.7	219.3	214.4	212.8	3.4
1986	6000		71.8	74.2	192.1	188.2	187.5	2.8
1987								2.7
1988	6000		68.9	68.9	192.0	192.6	190.9	3.0
1989	6000		66.3	68.7	198.7	198.7	195.3	4.2
1990	2304		24.2	25.9	77.3	76.3	72.8	4.0
1991	5634		60.8	61.3	188.1	159.0	74.6	4.3
1992	89		3.6	3.7	11.7	8.9	0.2	2.8
1993	1781		25.7	25.8	82.9			2.4
1994	1785	1.3	23.1	28.2	92.5			2.4
1995	332	1.3	17.4	19.5	65.6			2.3
Subtot	45007	23.3	670.4	714.6	1910.8	1655.1	1547.1	
Grand Total	45007	23.3	961.1	1005.3	2368.6	2102.1	1988.1	

16c. (U) **Program Funding Summary (Cont'd):**

(1) Subtotal for Missile Procurement does not include $33M FY 94, $154.3M FY 95, $169.6M FY 96, $148M FY 97, $1336M CTC for Longbow HELLFIRE (C70300). Longbow HELLFIRE has a separate SAR.
(2) For 1981 and 1982 entries, the following procurement program funds for HF launcher are contained in the APACHE SAR - FY 81 $2.4M, FY 82 $12.8M. FY 82 includes $1.2M local reprogramming for cost growth on contract. FY 83 includes local reprogramming of $12.2M for cost growth on contract. These funds were obligated and expended by Laser HELLFIRE although they are not included in the database.
(4) FY 88 includes $.6M of obligated funds not withdrawn by DA, although program was decreased in database.

17. (U) **Production Rate Data:**

a. (U) Production Baseline Rate

When the Department of Army authorized full-scale production of Laser HELLFIRE on 29 Mar 82, the steady-state, full-rate production baseline was 6000 missiles per year.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	73.5	92.5	113.3	-19.0	+20.8
Procurement Qty	1245	1785	2117	-540	+332
Proc. Unit Cost	0.059	0.052	0.054	+0.007	+0.002
FY 1995					
Procurement Cost	79.8	65.6	0.0	+14.2	-65.6
Procurement Qty	872	332	0	+540	-332
Proc. Unit Cost	0.092	0.198	N/A	-0.106	N/A
Balance of Proc. (FY 1996 to Complete)	153.3	0.0	113.3	+153.3	+113.3

Minimum sustaining in FY 94 of 1245 is assumed based on the program options which require Army minimum quantity procured prior to exercise of Navy options. Total quantity assumed is therefore, 1245 Army plus 1931 Navy for a total quantity procured of 3176. For FY 95, there is no Navy program and minimum sustaining is 1245 each. However, the minimum sustaining of 1245 in Fy 94 plus minimum sustaining of 1245 in FY 95 is greater than the total planned program. The minimum sustaining procurement differs in FY 95 because

17b. (U) **Production Rate Data (Cont'd):**
the current estimate is the balance of the program. Maximum economic assumed procurement of remaining program quantities in FY 94 to include 1931 missiles for the Navy.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	333/330
Procurement	36811/37775

Deliveries as of 31 Mar 93.

d. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 24600 - @ Peak Rate: 500.0/mo			
FY 75 Base-Year $	10264.000	18680.000	0.000
Then Year $	16224.000	44249.000	0.000
@ Qty 6650 (1st three years) - @ Peak Rate: 500.0/mo			
FY 75 Base-Year $	12138.000	29754.000	0.000
Then Year $	17879.000	68794.000	0.000

18. (U) **Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

Assumptions and Ground Rules - Operation and support costs are further categorized into fielding and sustainment costs. Fielding costs include second destination transportation and initial repair parts. Under the philosophy of a "certified round" concept, laser HELLFIRE sustainment costs should be minimum. The sustainment phase will continue 20 years beyond full deployment of Apache (thru FY 15). The following efforts are considered applicable:

- o Replenishment spares for training missile and support equipment.
- o Annual overhaul of laser HELLFIRE equipment - ten percent of missiles in storage will be checked annually. Of the items checked, those that fail will be shipped to the depot for overhaul and return. Costs are based on predicted failure rate and average cost to repair.
- o Transportation costs associated with annual overhaul.
- o Modification and material
- o System Project Management

18a. (U) Operating and Support Costs (Cont'd):

o Data - (Department of Army Technical Manuals, Depot Maintenance Workload Requirements, Maintenance and Engineering Publications, surveillance program software, etc.)

o Surveillance Program.

There is no antecedent system.

b. (U) Costs -- None.

Note the average annual cost per fielded quantity is .006.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Depot Maintenance	0.1	---	---	---	0.1
Total	0.1	---	---	---	0.1

A-9 CHINOOK

12-C37

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CH-47D CHINOOK

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION

MAY 25 1993 21

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
CH-47D/Medium Lift Helicopter (CHINOOK)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PROJECT MGR'S OFC, CH-47 MOD PROGRAM LTC PAUL A. DVORSKY
ATTN: SFAE-AV-CH Assigned: April 1, 1992
4300 GOODFELLOW BLVD. AV 693-1411 COMM (314) 263-1411
ST. LOUIS, MO 63120-1798

4. Program Elements/Procurement Line Items:

RDT&E:
PE 64213 Project DC37
PROCUREMENT:
APPN 2031 ICN AA0250 (Army)
APPN 2031 ICN AA0252 (Army)
APPN 2031 ICN AA0960 (Army)

No SECURITY Objection to PUBLIC RELEASE
25 MAY 1993
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5. Related Programs:

None.

6. Mission and Description:
The CH-47 is a transport helicopter used for artillery movement, missile transport, personnel movement, aircraft recovery, medical evacuation, transport of liquid and dry bulk cargo, etc. It has the

OASD(PA) DFOISR 93-C-652

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6. **Mission and Description (Cont'd):**

capability of carrying cargo internally or externally depending on cargo configuration. Employment of 1950 technology and the age of current CH-47 fleet dictated modernization to sustain Army fleet capability. Modernization provides substantial improvements in reliability, availability and maintainability (RAM), productivity, flight safety and survivability. CH-47A, B and C model airframes are updated and improved with seven newly designed and developed components. These systems include the Fiberglass Rotor Blades, Drive System, Hydraulic System, Auxiliary Power Unit (APU), Electrical System, Advanced Flight Control System (AFCS), and the Multi-Cargo Hook Load Suspension System. The modernized aircraft have a lift capability of 15,000 lbs at design conditions of 4,000 feet/95 degrees F. Fleet compatibility is improved, logistics support enhanced, maintenance support simplified, and operational costs reduced. The modernized CH-47 replaces the current CH-47 fleet on a one-for-one basis.

7. **Program Highlights:**

a. Significant Historical Developments --

Army System Acquisition Review Council III (ASARC III), held on August 19, 1980, directed that the program enter production to modernize the current available fleet. The Council directed the aircraft be type classified standard. The SECDEF Decision Memorandum (SDDM) was signed October 20, 1980.

The program has met or exceeded all key technical and operational characteristics, schedule milestones and cost parameters. All aircraft procured in the Multiyear I contract have been delivered. Remaining modernization production aircraft are included in the existing multiyear contract. The CH-47D Modernization Program is stable with predictable events.

The performance of the CH-47D Cargo Helicopter during Operation Desert Shield/Storm met all mission requirements in accordance with capability expectations. Its performance was measured outstanding. The final remanufacture year on the Multiyear Contract has been signed. A contract with Boeing Helicopters has been signed for the procurement of two (2) new CH-47D aircraft in accordance with the FY 1992 Dire Emergency Supplemental Appropriations Act.

b. Significant Developments Since Last Report --

As of March 31, 1993, the CH-47D Modernization Program is 90 percent expended meeting the SAR termination criteria.

It is anticipated that this will be our last SAR submission.

7b. Program Highlights (Cont'd):

The CH-47D system is expected to satisfy the mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline (APB) (dated March 2, 1989) or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone III	SEP 80	OCT 80	OCT 80
Initial Production Contract Award (single year)	SEP 80	OCT 80	OCT 80
Second Production Contract Award (single year)	N/A	DEC 81	DEC 81
Production Validation Testing			
Start	OCT 81	MAY 82	MAY 82
Complete	MAR 83	AUG 83	AUG 83
First Delivery, Initial Prod Contract	MAY 82	MAY 82	MAY 82
First Aircraft Deployed, FORSCOM	N/A	FEB 83	FEB 83
First Unit Equipped	N/A	FEB 83	FEB 83
First Delivery, Second Prod Contract	N/A	MAY 83	MAY 83
Third Production Contract Award (single year)	N/A	SEP 83	SEP 83
IOC (24th aircraft 1st unit)	AUG 83	FEB 84	FEB 84
Fourth Production Contract Award (single year)	N/A	MAR 84	MAR 84
First Delivery, Third Prod Contract	N/A	MAR 84	MAR 84
First Delivery, Fourth Prod Contract	N/A	JAN 85	JAN 85
Fifth Production Contract Award (multiyear)	N/A	APR 85	APR 85
First Delivery, Fifth Prod Contract	N/A	NOV 85	NOV 85
First Aircraft Deployed, Europe	N/A	OCT 87	OCT 87
First Aircraft Deployed, NGB	N/A	SEP 88	SEP 88
Sixth Production Contract Award (multiyear)	N/A	JAN 89	JAN 89
First Aircraft Deployed, Korea	N/A	JAN 89	FEB 89
First Aircraft Deployed, WESTCOM	N/A	JUL 90	MAY 90
First Delivery, Sixth Prod Contract	N/A	NOV 90	NOV 90
First Aircraft Deployed, SOUTHCOM	N/A	JAN 90	FEB 90
First Aircraft Deployed, USAR	N/A	JAN 91	JAN 91

9b. Schedule (Cont'd):

b. Previous Change Explanations --

Initial Production Contract Award was changed to October 1980, because of ASARC III decision scheduled in late FY 80. The IOC slipped under the present production buildup due to the restructuring of company TOE from 16 to 24 aircraft as changed by Aviation Requirements for Combat Structure of the Army (ARCSA) III and initial allocation of four CH-47D aircraft to test and training base TDA requirement. Current estimate for DSARC III changed from September 1980, as the SECDEF Decision Memorandum (SDDM) was signed October 20, 1980. First Aircraft Deployed, Korea, changed to reflect schedule slipped from January 1989 to February 1989 resulting from scheduling problems with the C5A. The milestone for 1st Aircraft Deployed, WESTCOM was accelerated from July 1990 to May 1990 to utilize C-5 transport in a most cost effective manner. The milestone for 1st Aircraft Deployed SOUTHCOM slipped from January 1990 to February 1990 due to delays encountered in ferrying aircraft from the contractor's facility. The milestone for 1st Aircraft Deployed, USAR, accelerated from February 1991 to January 1991 due to change in Special Operations Aircraft (SOA) requirements.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
DCP, Number 139, as revised 05 January 1977.

Approved Program:
AAE Approved Acquisition Program Baseline dated 02 March 1989.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Empty Weight (lbs)	N/A	23401	/ 23401	23401	23401
Mission 1 Payload 1/ (lbs)	15775	15775	/ 15000	15360	15360
Max Cruise Speed at Design Gross Wt (33000lbs) (knots)	155	162	/ 155	160	160
Service Ceiling at Design Gross Wt. (ft.) (one engine inoperative)	10000	13200	/ 10000	13400	13400

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Hover-out-of-Ground Effect (lbs)	N/A	50000	/ 50000	50000	54000
Mission III Payload 2/ (lbs)					
Outboard	N/A	13000	/ 13000	13907	13907
Inboard	N/A	6500	/ 6500	6953	6953
System Operational Reliability (SOR) (MTBF) (hrs)					
DSARC III Objective	.96	.96	/ 1.10	1.38	1.33
Maturity Objective (100k hrs)	1.4	1.33	/ 1.33	2.1	2.1
Hardware System Reliability (HSR) (MTBF) (hrs)					
DSARC III Objective	2.06	2.06	/ 2.20	3.14	3.41
Maturity Objective (100k hrs)	3.0	3.00	/ 3.58	6.3	6.3
Maintenance Manhours/ Flight Hour	17.66	15.1	/ 16.24	9.73	9.73
Flight Performance (Primary Msn) 1/					
Vertical Rate of Climb (ft/min)	200	200	/ 200	200	200
Crashworthiness (Vert Impact Vel, Ft/sec)	N/A	8.2	/ 8.2	8.2	8.2
Engine Size, Intermediate Rated Power at Sea Level	N/A	3400	/ 3400	3400	3400
Mission Radius (NM)	30	30	/ 30	30	30
Self-Deployable (NM)	N/A	1260	/ 422	1058	1058
Air Transportability in C-5 (time to Load/Unload) (hrs)	N/A	7.5	/ 12	7.5	7.5

FOOTNOTES:

1. Demonstrated performance reflects production testing for DSARC III Objective, System Operational Reliability; Vertical Rate of Climb; Mission Radius; and Maximum Cruise Speed at Design Gross Wt.

2. Sample field data collection as of December 1990 for Maturity

10a. Performance Characteristics (Cont'd):
Objective, System Operational Reliability and Hardware System Reliability and for Maintenance Man-Hour/Flight Hour.

3. Demonstrated performance reflects prototype testing for DSARC III Objective, Hardware System Reliability.

4. Four-thousand feet pressure altitude, 95 degrees Fahrenheit for Mission Payload.

b. Previous Change Explanations --

Reflects results of production testing vice prototype testing. Changes resulting from demonstrated performance, approved engineering changes, rating of transmission from 100 to 101 percent for true instrument reading of torque meter.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
DCP, Number 139, as revised 05 January 1977.

Approved Program:
AAE Approved Acquisition Program Baseline dated 02 March 1989.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	76.1	86.3	86.3
Procurement	806.4	1317.7	1317.0
Flyaway	(750.6)		(1213.3)
Other Weapon Systems	(29.8)		(47.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.0)		(55.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	882.5	1404.0	1403.3
Escalation	680.3	1917.8	1950.7
Development (RDT&E)	(22.5)	(27.2)	(27.2)
Procurement	(657.8)	(1890.6)	(1923.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1562.8	3321.8	3354.0

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	N/A	0
Procurement	361	472	474
Total	361	472	474

Note: Excludes 3 RDTE prototypes from the SAR Baseline and 3 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
DCP, Number 139, as revised 05 January 1977.

Approved Program:
AAE Approved Acquisition Program Baseline dated 02 March 1989.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3354.0	3355.2	3354.0
(2) Quantity	474	474	474
(3) Unit Cost	7.076	7.078	7.076
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	12.0	12.0	1.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	12.0	12.0	1.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	98.6	1464.2	0.0	1562.8
Previous Changes:				
Economic	-	+213.9	-	+213.9
Quantity	-	+776.2	-	+776.2
Schedule	-	-7.6	-	-7.6
Engineering	-	-	-	-
Estimating	+14.9	+680.6	-	+695.5
Other	-	-	-	-
Support	-	+114.4	-	+114.4
Subtotal	+14.9	+1777.5	-	+1792.4
Current Changes:				
Economic	-	-0.4	-	-0.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+14.1	-	+14.1
Other	-	-	-	-
Support	-	-14.9	-	-14.9
Subtotal	-	-1.2	-	-1.2
Total Changes	+14.9	+1776.3	-	+1791.2
Current Estimate	113.5	3240.5	-	3354.0

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	76.1	806.4	0.0	882.5
Previous Changes:				
Quantity	-	+235.6	-	+235.6
Schedule	-	+41.4	-	+41.4
Engineering	-	-	-	-
Estimating	+10.2	+181.2	-	+191.4
Other	-	-	-	-
Support	-	+52.7	-	+52.7
Subtotal	+10.2	+510.9	-	+521.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+4.5	-	+4.5
Other	-	-	-	-
Support	-	-4.8	-	-4.8
Subtotal	-	-0.3	-	-0.3
Total Changes	+10.2	+510.6	-	+520.8
Current Estimate	86.3	1317.0	-	1403.3

b. Previous Change Explanations --

RDT&E

Estimating: Reflects actual RDT&E program.

Procurement

Economic: Application of CH-47D historical and revised escalation indices.

Quantity: Program increased 111 aircraft from 361 to 472. Addition of two aircraft as a result of the FY 1992 Dire Emergency Supplemental Appropriations Act. Program increased from 472 to 474.

Schedule: Increase in production rate from 3 to 4 aircraft per month.

Estimating: Refinement of estimate for production costs.

13b. Cost Variance Analysis (Cont'd):

Elimination of multiyear contingency funds for EPA and airframe preparation/Materiel Requirements List; elimination of small business set aside and Engineering Changes. Increase in Long Lead Time Items for follow-on multiyear contract. Funding Reductions and redirection of funds to higher priority safety improvements have caused decreases to the program. Increase for current and prior year inflation offset (1991). Increased cost for aircraft inducted with corrosion, deferred maintenance and shortages of Government Furnished Equipment.

Support: Refinement of prior estimate. Revised spares policy definition. Inclusion of Total Package Fielding Cost and Project Management Administration Cost. Engineering Services Contracts added to procurement funding. Reduction in publications costs due to inhouse effort. Reduction in trainers resulting from contractor changes. Spares Adjustment.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised escalation rates. (Economic)		-0.4
Increased cost for aircraft being inducted due to corrosion, deferred maintenance & shortages of Government Furnished Materials. (Estimating)	+4.6	+14.8
Current Year & Prior Year Inflation Offset (Estimating)	-0.2	-1.1
Decrease for procurement of two new aircraft to the negotiated amount of the contract. (Estimating)	-0.5	-1.5
Increase for economic price adjustment in accordance with the terms of the Multiyear Production Contract (Estimating)	+0.6	+1.9

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Increase for Cycle 12 publications and for Depot Maintenance Work Requirement publications to assure necessary publications are available for field maintenance and depot maintenance. (Support)	+0.8	+1.9
Decrease due to lower than anticipated total package fielding costs. (Support)	-0.5	-1.6
Decrease due to overstated spares requirement. (Support)	-5.1	-15.2
Procurement Subtotal	-0.3	-1.2

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes: Econ	Qty	Sch	Eng	Est	Other	Spt	Total	PAUC (Current Est)
4.329	0.450	0.606	-0.016	--	1.497	--	0.210	2.747	7.076

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

AIRFRAME FY 90-2 MULTIYR:

BOEING DEFENSE & SPACE GR, PHILADELPHIA, PA
DAAJ09-89-C-A010, FFP
Award: January 13, 1989
Definitized: January 1, 1989

Initial Contract Price: Target	Ceiling	Qty
$773.1	N/A	144

Current Contract Price: Target	Ceiling	Qty	Estimated Price At Completion: Contractor	Program Manager
$836.8	N/A	144	$858.7	$852.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

15. **Contract Information (Cont'd):**
CPR information is not required for this FFP Contract.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 94.7% (18 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 100.0% ($3353.0 / $3354.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	113.5	-	-	-	113.5
Procurement	3239.5	1.0	-	-	3240.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3353.0	1.0	-	-	3354.0

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army								
1976				10.1	11.3	11.3	11.3	8.7
197T				2.1	2.4	2.4	2.4	2.2
1977				19.9	25.8	25.8	25.8	8.1
1978				24.2	32.0	32.0	32.0	8.5
1979				13.9	19.1	19.1	19.1	7.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1980				15.7	22.4	22.4	22.4	7.7
1981				0.4	0.5	0.5	0.5	7.7
Subtot				86.3	113.5	113.5	113.5	
Appropriation: 2031 Aircraft Procurement, Army								
1980		6.3		15.5	28.6	28.6	28.6	13.4
1981	9	8.1	63.6	79.0	159.3	159.3	159.3	10.8
1982	19	1.6	91.9	104.2	219.0	219.0	219.0	7.9
1983	24	1.4	99.0	107.4	247.5	247.5	247.5	2.8
1984	36	1.3	129.0	137.7	320.1	320.1	320.1	3.4
1985	48	1.0	137.6	155.4	369.0	369.0	369.0	0.8
1986	48		113.0	114.8	273.3	273.3	273.3	
1987	48		96.4	102.6	247.8	247.8	247.8	0.8
1988	48		88.4	98.5	240.8	240.8	237.1	6.7
1989	48		92.6	107.1	288.8	288.8	270.9	4.2
1990	48		103.7	105.0	291.0	291.0	241.9	4.0
1991	48		92.7	94.3	271.6	271.6	237.3	4.4
1992	50		85.7	91.3	270.7	264.8	221.1	4.1

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

1993				3.9	12.0	4.2	0.5	3.7
1994				0.3	1.0			3.6
Subtot	474	19.7	1193.6	1317.0	3240.5	3225.8	3073.4	
Grand Total	474	19.7	1193.6	1403.3	3354.0	3339.3	3186.9	

This Budget Line is a Shared Budget Line. Funding is used both for the Production Modernization Program and for Field Retrofit Modifications. In FY 91, $28.5 million of the program was used for field retrofit modifications; in FY 92, $12.2 million was used for field retrofit modifications; in FY 93, $8.8 million was used for field retrofit modifications and in FY 94, $14.4 million will be used for field retrofit modifications. Funding FY 95 and out is planned for modifications by field retrofit. In FY 93, $14.8 million of the spares funding is being used for Special Operations Aircraft, MH-47E aircraft, unique spares requirements.

17. Production Rate Data:

a. Production Baseline Rate

MILESTONE III provided for a build up to a production rate of 48 aircraft per year. The FY 92 Dire Emergency Supplemental Appropriations Act provided for procurement of an additional two aircraft in FY 92.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		1.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

No production quantity buys after FY 92.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	3/3
Procurement	418/419

An additional 7 aircraft have been delivered since the as of date of 31 December 1992.

d. Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 361 - @ Peak Rate: 4.0/mo			
FY 75 Base-Year $	2.445	2.560	0.000
Then Year $	4.329	6.314	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 75 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

Design-to-Cost Goal for CH-47A, Quantity of 104, Development Estimate for FY 75 Base-Year is $2.8 and for Then-Year is $4.6. Peak Rate, Current Estimate and Latest Approved Threshold are not applicable.

Design-to-Cost Goal for CH-47B, Quantity of 74, Development Estimate of FY 75 Base-Year is $2.4 and for Then-Year is $4.2. Peak Rate,

17d. **Production Rate Data (Cont'd):**
Current Estimate and Latest Approved Threshold are not applicable.

Design-to-Cost Goal for CH-47C, Quantity of 183, Development Estimate of FY 75 Base-Year is $1.6 and for Then-Year is $2.9. Peak Rate, Current Estimate and Latest Approved Threshold are not applicable.

Design-to-Cost Goal for CH-47D, Quantity of 436, Current Estimate of FY 75 Base-Year is $2.5 and for Then-Year is $6.2, Latest Approved Threshold for FY 75 Base-Year is $2.6. Peak Rate and Development Estimate is not applicable.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

Sustainment costs are based on 472 CH-47D aircraft operating at a tempo of 180 peacetime flying hours per year with each aircarft operating 20 years. Replenishment costs include aircraft spares and repair parts. Depot maintenance includes the cost of labor, material and transportation for maintenance performed at the depot level. Military personnel includes costs for the aircraft flight crews, Aviation Unit Maintenance (AVUM) personnel, Aviation Intermediate Maintenance (AVIM) personnel and AVUM and AVIM indirect support personnel. Sustainment costs are based on the CH-47 Modernization Program Baseline Cost Estimate (BCE), August 1989. There is no antecedent system for CH-47D.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1975 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 1,000 Flying Hours	Avg Annual Cost Per Antecedent
Replenishment	0.3	N/A
Petro, Oil & Lub (POL)	0.1	N/A
Depot Maintenance	0.2	N/A
Field Maintenance <.1	0.0	N/A
Transportation <.1	0.0	N/A
System Specific Repl Trn	0.1	N/A
Military Personnel	1.0	N/A
System Project Mgmt <.1	0.0	N/A
Modification Kits	0.1	N/A
Other Sustainment	0.2	N/A
	0.0	N/A
Total	2.0	N/A

18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Interim Contr Spt	---	---	---	---	---
Contr Logistics Spt	---	---	---	---	---
Sustaining Engrg	0.1	0.1	0.1	---	0.3
Depot Maintenance	0.1	---	---	---	0.1
Contr Eng/Tech Serv	0.1	0.1	0.1	---	0.3
Other	3.7	2.5	1.8	---	8.0
Total	4.0	2.7	2.0	---	8.7
Total	8.0	5.4	4.0	---	17.4

NOTE: The Average Cost Per Flying Hour is $2,047.00.

NOTE: Operating and Support Contract Costs are services for directed initiative for application of RCM logic impacted requirements, incorporation of RCM strategy into depot program to overhaul/repair only those items/components requiring it, engineering support to external division customers, sample data collection and depot maintenance work requirements, preventative maintenance, Army Oil Analysis program and revision of technical publications.

N-8 C/MH-53E

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: C/MH-53E

AS OF DATE: December 31, 1992

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MAY 25 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. **Designation and Nomenclature (Preferred Name):**
CH-53E (Super Stallion); MH-53E (Sea Dragon)

2. **DoD Component:** Navy

3. **Responsible Office and Telephone Number:**
H-53 PROGRAM OFFICE
NAVAL AIR SYSTEMS COMMAND
PMA 261
WASHINGTON, DC 20361-1261
COL WILLIAM WOLFE
Assigned: July 21, 1989
AV 222-3151 COMM (202) 692-3151

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604260N, 0604714N
PROCUREMENT:
APPN 1506 ICN 0148 (Navy)
APPN 0350 ICN 1560 (DCA/DNA)
MILCON:
PE 0206496N

No Security Objection to Open Publication
~~AS AMENDED~~
93-C-0405
MAY 25 1993
Office of the Chief of
Naval Operations Dept. of the Navy

5. **Related Programs:**
SH-60B LAMPS MK III SEA HAWK; SH-60F CV HELO; ARMY UH-60A BLACK HAWK; AIR FORCE HH-60D NIGHT HAWK.

6. **Mission and Description:**
The CH-53E is a shipboard-compatible helicopter configured for the lift and movement of cargo and troops/passengers internally, the

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6. Mission and Description (Cont'd):

tactical recovery of downed or damaged aircraft, including self-retrieval and the lift of heavy bulky equipment and supplies by external suspension from the aircraft. The MH-53E helicopter is a CH-53E modified to perform the primary mission of Airborne Mine Countermeasures (AMCM). The AMCM mission includes minesweeping, mine neutralization, mine hunting, floating mine destruction, channel marking, and surface towing such as the towing of surface craft and ships. The CH/MH-53E is similar to the basic CH-53D with the following exceptions: three T-64-GE-416A turbine engines versus two T-64-GE-413 turbine engines; 79 ft. versus 72 ft. main rotor diameter; 7 titanium spar versus aluminum spar main rotor blades; 20 ft. versus 16 ft. tail rotor diameter and canted 20 degrees; 13,140 SHP versus 7,560 SHP main gearbox and 40 inch extension in the transition section of the fuselage. Full provisions (weight, space and plumbing) for external auxiliary fuel tanks, fuel jettison, air-to-air refueling, and ship-to-air refueling are included.

7. Program Highlights:

a. Significant Historical Developments —

SOR 14-20 of 1967 established the requirement for a heavy lift helicopter (HLH). In May 1973, a DSARC I decision approved the fabrication and test of two development prototypes (YCH-53E). First flight of the YCH-53E occurred in March 1974. DSARC IIA decision of 14 May 1975 approved the engineering development phase to include fabrication and test of two production prototypes and one static test article. First flight of the production prototype was in December 1975. A DSARC III was held in January 1978 which approved procurement of the first twenty-nine CH-53E production aircraft. The contract delivery schedule to provide the initial aircraft in May 1980 was not met; the Navy provisionally accepted the first production model in December 1980. The FY 82 President's Budget increased total procurement from 49 to 126 aircraft including seven CH-53E Airborne Mine Countermeasure capable aircraft that would replace the MH-53D losses. The FY 83 President's Budget increased production aircraft from 126 to 160 which included 25 additional AMCM capable aircraft designated MH-53E. Multiyear procurement for CH/MH-53E was approved for FY 86 through FY 89 in the FY 85 DOD Appropriations Act and included 56 CH/MH-53's. First flight of the MH-53E development prototype occurred in September 1983, DT-IIB testing was completed June 1984, and OT-IIA testing 1985. The MH-53E was approved for limited production (ALP) in November 1986. The CH/MH-53E multiyear procurement contract was definitized in September 1986 for the period FY 86 through FY 89. Estimated savings to the Government were $92.8M. On 24 October 1988 the MH-53E received Approval from Assistant Secretary of the Navy (Shipbuilding & Logistics) for Full Rate Production. On 1 August 1988 the west coast MH-53E squadron HM-15 stood up at NAS Alameda. RDT&E efforts during

7a. Program Highlights (Cont'd):

FY 89 included Helicopter Night Vision System development and development of an upgraded T-64-416 engine for the CH/MH-53. The FY 1991 procurement of CH-53E's was deleted by Congressional action and 12 MH-53E's were subsequently put into the FY 1991 budget using National Guard and Reserve Equipment funds. The FY 1992 procurement of MH-53's was deleted for the active Navy by Congressional action and four (4) MH-53's were subsequently inserted into the FY 1992 budget using National Guard and Reserve Equipment (NGRE) funds.

b. Significant Developments Since Last Report —
Twelve MH-53Es with full support were procured for the Navy Reserves using FY 91 and FY 92 National Guard and Reserve (NGRE) funds. Four active Navy MH-53's in the FY 1994 program were deleted as requirements for the Navy.

The CH/MH-53 are expected to satisfy the mission requirements.

c. Changes Since As Of Date — None.

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline dated October 1990 or Nunn McCurdy Unit Cost breaches.

9. Schedule:

a. Milestones —	Development Estimate	Approved Program	Current Estimate
CH-53E			
*Program Initiation (CH-53E)	N/A	N/A	JUN 69
Milestone I (DSARC) (Concept Validation)	N/A	MAY 73	MAY 73
First Flight Development Prototype	MAR 74	N/A	MAR 74
Milestone II (DSARC) (FSED Decision)	OCT 74	APR 75	APR 75
BIS Initial Report	MAR 76	N/A	JUL 77
*Navy Technical Evaluation (CH-53E)	N/A	N/A	JAN 78
Milestone III (DSARC) (Production Decision)	MAR 76	JAN 78	JAN 78
IOT&E Complete	FEB 76	N/A	MAY 79
Approval for Service Use (ASU)	N/A	APR 80	APR 80
Acceptance 1st Production A/C	JUN 77	N/A	DEC 80
Fleet Introduction	JUL 77	N/A	JUN 81
IOC/First Detachment Deployable	N/A	JUN 82	JUN 82
*BIS-FTP (CH-53E)	N/A	N/A	DEC 82

9a. Schedule (Cont'd):

Milestones (Cont'd) —	Development Estimate	Approved Program	Current Estimate
*FOT&E (CH-53E)	N/A	N/A	APR 83
*First Flt Development Proto- (CH-53E)	N/A	N/A	SEP 83
*Navy Support Data (CH-53E)	N/A	N/A	OCT 83
*OPEVAL (MH-53E)	N/A	N/A	APR 86
Procurement Objective Obtained MH-53E	SEP 90	N/A	SEP 95(Ch-1)
Milestone I DCP #94	N/A	FEB 78	FEB 78
Milestone II FSED	N/A	FEB 81	FEB 81
Milestone IIIA Limited Production	N/A	MAR 85	MAR 85
*Acceptance 1st Production a/c (MH-53E)	N/A	N/A	JUN 86
Milestone IIIB Continued Limited Production	N/A	NOV 87	NOV 87
*FOT&E (MH-53E)	N/A	N/A	DEC 87
IOC	N/A	AUG 88	AUG 88
*AFP (MH-53E)	N/A	N/A	OCT 88
Milestone IIIC Full Scale Prod.	N/A	OCT 88	OCT 88
FOC	N/A	APR 89	APR 89

*- Denotes Non-baseline Milestones

b. Previous Change Explanations —

DSARC II was delayed due to loss of one of the first two prototypes in ground accident. IOT&E, BIS Initial Report, and DSARC III were delayed due to restructured program to evaluate all EDT&E improvements and rescheduling testing. Naval Technical Evaluation was delayed due to change in completion. Approval for Service Use (ASU) was delayed due to additional testing requirements and a delay in administrative ASU processing. Acceptance First Production Aircraft and Fleet Introduction were initially delayed due to a change in aircraft procurement and delivery schedule. FOT&E was delayed due to various flight restrictions imposed on the aircraft which precluded testing. BIS-FTP was delayed due to change in completion date of a flight test expansion to resolve YAW oscillation anomaly. Acceptance of First Production Aircraft, Fleet Introduction, FOT&E, BIS-FTP, and IOC were further delayed based on a new production schedule reflecting a long-term labor strike in the aerospace bearing and forging industry and restructuring of initial aircraft utilization. OPEVAL extended because of weather, unplanned maintenance delays, and administrative problems with the contractor. Accepted aircraft 5 months early to reflect revised development schedule. Approval for Full Production was delayed because of extended OPEVAL. The program quantities were increased, extending

9b. Schedule (Cont'd):
the time the new procurement objective could be obtained.

c. Current Change Explanations —

Program quantities were reduced and delayed which extended the time the procurement objective could be obtained.

d. References —

Development Estimate:
Development Concept Paper (DCP) #94, dated 25 April 1973, subject "CH-53E Prototype Development Approval" as amended by Decision Coordinating Paper (DCP) #94, dated 14 February 1978, subject "CH-53E Production Approval".

Approved Program:
NAE Approved Acquisition Program Baseline dated 17 October 1990.

10. Performance Characteristics:

a. Performance —	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Maximum Gross Wt. (GW) (lbs)					
Weight Empty	34000	33326	/ 33326	33226	33226
W/Ext. Payload HIGE SL/90 deg. F	73500	73500	/ 73500	73500	73500
Dimensions (Spread Configuration)					
Length	99.0	99.5	/ 99.5	99.5	99.5
Width	79.0	79.0	/ 79.0	79.0	79.0
Height	28.4	28.4	/ 28.4	28.4	28.4
Dimensions (Folded Configuration)					
Length	60.3	60.5	/ 60.5	60.5	60.5
Width	29.4	28.5	/ 28.5	28.5	28.5
Height	18.6	18.7	/ 18.7	18.7	18.7
Engine Maximum SHP, Sea Level Static (10 min)	4380	4380	/ 4380	4380	4380
Speed (KTS) Vmax (KTS Level FLT, MAX continuous power S.L.)					
46.5K lbs GW (Internal Load)	170	170	/ 170	170	170

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
56K lbs GW (Internal Load)	140	140	/ 140	140	140
70K lbs GW (External Load)	100	100	/ 100	100	100
Rate of Climb (ft/min) One Engine Inop @ 69,750 lbs GW	150	200	/ 200	200	200
Range (NM)	550	500	/ 500	500	500
Internal Payload (1000 cu ft cargo, NTE gross weight limits) with full internal and full external aux fuel tanks (10% reserve); 500 NM Range 3000 MSL 91.5 F HOGE (lbs)	20000	16000	/ 16000	20000	20000
External Payload 50 NM radius S/L90 F, HIGE (20 min fuel reserve)	32000	32000	/ 32000	32000	32000
Reliability					
Mission Reliability (1 hr mission @ 90% confidence) (%)	0.93	0.93	/ 0.93	0.93	0.93
Aircraft MFHBA (1 hr mission)	13.7	13.8	/ 13.8	13.8	13.8
Aircraft MFHBF	0.77	0.70	/ 0.70	0.70	0.70
Maintainability Aircraft MMH/FH (org. corrective)	8.0	9.50	/ 9.50	7.72	9.50
Availability	0.85	0.93	/ 0.93	0.93	0.93
AMCM (MH-53E)					
Tow Tension (x 1000 lbs)	N/A	30.0	/ 30.0	30.0	30.0
Time on Station (hrs)	N/A	3.2	/ 3.2	3.2	3.2

b. Previous Change Explanations —

Based on demonstrated performance the following technical/operational characteristics have been changed: rate of climb, mission reliability, MFHBA, availability, and weight empty, tow tension and

10b. Performance Characteristics (Cont'd):
time on station. Demonstrated performance during DT-II A through D OT-IIB. Demonstrated Performance reflects current achievements to date. Payload internal from 16000 based on demonstrated performance.

c. Current Change Explanations — None.

d. References —

Development Estimate:
Development Concept Paper (DCP) #94, dated 25 April 1973, subject "CH-53E Prototype Development Approval" as amended by Decision Coordinating Paper (DCP) #94, dated 14 February 1978, subject "CH-53E Production Approval".

Approved Program:
NAE Approved Acquisition Program Baseline dated 17 October 1990.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	93.3	182.4	200.9
Procurement	371.1	2434.9	1627.7
Airframe	(250.2)		(1135.0)
Engine	(46.9)		(166.6)
Avionics	(5.4)		(14.2)
Other GFE	(1.9)		(17.9)
Total Flyaway	(304.4)		(1333.7)
Other Weapon System	(29.4)		(106.2)
Peculiar Support	(0.0)		(87.8)
Initial Spares	(37.3)		(100.0)
Construction (MILCON)	0.0	2.8	2.8
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 73 Base-Year $	464.4	2620.1	1831.4
Escalation	114.0	5228.6	3158.6
Development (RDT&E)	(7.0)	(101.2)	(141.9)
Procurement	(107.0)	(5122.8)	(3012.1)
Construction (MILCON)	(0.0)	(4.6)	(4.6)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	578.4	7848.7	4989.9

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	4	N/A	4
Procurement	70	377	222
Total	74	377	226

c. Foreign Military Sales/International Cooperative Programs — None

d. Nuclear Costs — None

e. References —

Development Estimate:
Development Concept Paper (DCP) #94, dated 25 April 1973, subject "CH-53E Prototype Development Approval" as amended by Decision Coordinating Paper (DCP) #94, dated 14 February 1978, subject "CH-53E Production Approval".

Approved Program:
NAE Approved Acquisition Program Baseline dated 17 October 1990.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	4989.9	5069.0	4989.9
(2) Quantity	226	232	226
(3) Unit Cost	22.079	21.849	22.079
b. Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	495.9	495.9	297.5
Less CY Adv Proc	48.2	48.2	15.0
Plus PY Adv Proc	41.9	41.9	46.9
Net Total	489.6	489.6	329.4
(2) Quantity	20	20	12
(3) Unit Cost	24.480	24.480	27.450

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	100.3	478.1	0.0	578.4
Previous Changes:				
Economic	+5.6	+117.4	-0.2	+122.8
Quantity	-	+2868.8	-	+2868.8
Schedule	+1.5	+225.1	-	+226.6
Engineering	+162.7	+185.6	-	+348.3
Estimating	+33.8	+244.4	+0.4	+278.6
Other	+3.0	-	-	+3.0
Support	+18.6	+616.7	+7.2	+642.5
Subtotal	+225.2	+4258.0	+7.4	+4490.6
Current Changes:				
Economic	-1.3	-40.2	-	-41.5
Quantity	-	-67.5	-	-67.5
Schedule	-	+2.0	-	+2.0
Engineering	+17.9	-	-	+17.9
Estimating	+0.7	-11.4	-	-10.7
Other	-	-	-	-
Support	-	+20.7	-	+20.7
Subtotal	+17.3	-96.4	-	-79.1
Total Changes	+242.5	+4161.6	+7.4	+4411.5
Current Estimate	342.8	4639.7	7.4	4989.9

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1973 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	93.3	371.1	0.0	464.4
Previous Changes:				
Quantity	-	+994.4	-	+994.4
Schedule	+1.6	-17.2	-	-15.6
Engineering	+77.1	-130.6	-	-53.5
Estimating	+10.6	+202.7	+0.2	+213.5
Other	+2.4	-	-	+2.4
Support	+10.5	+223.8	+2.6	+236.9
Subtotal	+102.2	+1273.1	+2.8	+1378.1
Current Changes:				
Quantity	-	-19.0	-	-19.0
Schedule	-	-	-	-
Engineering	+5.2	-	-	+5.2
Estimating	+0.2	-1.0	-	-0.8
Other	-	-	-	-
Support	-	+3.5	-	+3.5
Subtotal	+5.4	-16.5	-	-11.1
Total Changes	+107.6	+1256.6	+2.8	+1367.0
Current Estimate	200.9	1627.7	2.8	1831.4

b. Previous Change Explanations —

RDT&E

Economic: Revised escalation indices.

Schedule: Extended RDT&E beyond FY 76 and restructured development effort.

Engineering: Increased requirement for Transmission Development Program, development of Digital Automatic Flight Control System, completion of developmental derived improvements, completion of design improvements, and design and development of AMCM configurations, development of all composite main rotor blades to replace titanium spar blades.

Estimating: Refinement of R&D estimates and revised estimates for development of Composite Main Rotor Blade and

13b. Cost Variance Analysis (Cont'd):

configuration enhancements including system safety. Reduction for escalation and realignment of requirements.

Other: Cost overrun and award of contract incentive.

Support: Increase in EIS and OPEVAL support, first article of OFT visual system and peculiar training equipment, and support of AMCM design, development, and test and evaluation.

Procurement

Economic: Revised escalation indices.
Adjustment for program change related escalation.

Quantity: Reduction of 70 to 49 aircraft, increase from 49 to 126 aircraft, increase from 126 to 160 aircraft, decrease from 160 to 153 aircraft, decrease from 153 to 149 aircraft, increase from 149 to 152 aircraft, increase from 152 to 377 aircraft, adjustment of category costs, and decrease from 377 to 230 aircraft. Reduction of two aircraft during FY 92 budget requirements.

Schedule: Production delay resulting from development stretchout and numerous production changes with net result of stretchout of procurement. Decrease costs due to program acceleration and revised schedule. Adjustment of costs for increases since the baseline associated with the quantity reduction. Delay of FY 91 buy to FY 92.

Engineering: Design changes in airframe, increase in production nonrecurring costs, AMCM configuration changes and tooling refurbishment, configuration change for Helicopter Night Vision Systems.
Adjustment of costs associated with quantity reduction of 147 aircraft. Allocation of cost for quantity decrease.

Estimating: Revised production estimates based on past experience and new data from contractors, revised estimates in flyaway to reflect multiyear procurement, new vendor airframe estimates, and adjustments for changes in prior year escalation rates, as well as replacement and refurbishment of aircraft tooling. Adjustment for current and prior year offset and adjustment of non-recurring costs to decrease out-year requirements and add costs for additional tooling for production acceleration. Adjustment of costs associated with quantity reduction of 147 aircraft. Refinement of cost estimate and correction of cost categorization plus increased requirements for non-recurring costs.

13b. Cost Variance Analysis (Cont'd):

Support: Increased support requirements for PGSE, training and other support and spares due to aircraft quantity changes, revised estimates in support and spares for Helicopter Night Vision Systems. Decreased requirements for support and spares associated with reduction of 147 aircraft. Increased requirements for peculiar support equipment.

MILCON

Economic: Revised escalation indices

Estimating: Adjustment for current and prior escalation indices.

Support: Construction of composite trainer buildings.

c. Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.7
Delete the requirements for the composite main rotoblade development (Engineering)	-2.0	-6.3
Initiate design of mid-life upgrades (Engineering)	+7.2	+24.2
RDT&E Subtotal	+5.4	+17.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-38.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	-1.4
Adjustment for Current & Prior Inflation. (Estimating)	+5.6	+19.1

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Total Variance associated with decrease of two NGRE aircraft	-15.5	-55.3
Quantity Variance resulting from decrease of two NGRE aircraft (Quantity)	-13.4	-47.8
Estimating Variance associated with NGRE Quantity decrease (Estimating)	-2.1	-7.5
Total Variance associated with decrease of four active Navy aircraft	-23.7	-83.3
Quantity variance resulting from decrease of four active Navy aircraft (Quantity)	-5.6	-19.7
Estimating Variance associated with quantity decrease for four active Navy aircraft (Estimating)	-18.1	-63.6
Change in procurement buy schedule related to moving aircraft from FY 94 to FY 95 (Schedule)	—	+2.0
Adjustment for refinement of estimate to account for actual costs (Estimating)	+4.0	+5.5
Addition of Non-recurring cost for ramp down previously identified as support costs for production efforts (Estimating)	+9.6	+35.1
Decrease of Support costs previously reflected for production efforts (Support)	-9.6	-35.1
Adjustment for Current & Prior Inflation. (Support)	+0.5	+1.3
Increase cost of support costs for the NGRE program (Support)	+12.8	+55.3

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Decreased requirement for initial spares resulting from quantity reductions (Support)	-0.2	-0.8
Procurement Subtotal	-16.5	-96.4

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.816	0.360	7.138	1.012	1.620	1.185	0.013	2.935	14.263	22.079

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement —

FY 90 AIRFRAME::

SIKORSKY AIRCRAFT, STRATFORD, CT
N00019-89-C-0203, FFP
Award: September 27, 1990
Definitized: January 16, 1991

Initial Contract Price		
Target	Ceiling	Qty
$164.0	$0.0	9

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$164.0	$0.0	9	$164.0	$164.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the last time this contract will be shown in this report since the contract is now complete.

15. Contract Information (Cont'd):

AIRFRAME:	Initial Contract Price Target	Ceiling	Qty
UTC (SIKORSKY), STRATFORD, CT N00019-90-C-0033, FFP Award: February 6, 1991 Definitized: December 30, 1991	$261.0	$261.0	14

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$261.0	$261.0	14	$261.0	$261.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

CH/MH-53E:	Initial Contract Price Target	Ceiling	Qty
UNITED TECHNOLOGIES CORP, STRATFORD, CT N00019-91-C-0095, FFP Award: October 30, 1992 Definitized: October 30, 1992	$737.3	$0.0	34

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$737.3	$0.0	34	$0.0	$0.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status —

(1) Percent Program Completed: 77.8% (21 yrs/27 yrs)

(2) Percent Program Cost Appropriated: 89.5% ($4468.0 / $4989.9)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY73-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	313.0	5.6	6.2	18.0	342.8
Procurement	4147.6	297.5	171.0	23.6	4639.7
MILCON	7.4	-	-	-	7.4
O&M	-	-	-	-	-
Total	4468.0	303.1	177.2	41.6	4989.9

c. Annual Summary —

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1973				14.0	14.6	14.6	14.6	4.3
1974				26.8	30.3	30.3	30.3	8.0
1975				38.2	47.0	47.0	47.0	10.9
1976				9.6	12.5	12.5	12.5	6.6
197T				16.0	21.7	21.7	21.7	2.9
1977				8.5	11.9	11.9	11.9	2.6
1978				13.6	20.4	20.4	20.4	6.8
1979				0.2	0.4	0.4	0.4	8.4
1980				7.9	14.5	14.5	14.5	10.5

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1981				4.0	8.0	8.0	8.0	10.6
1982				5.6	11.8	11.8	11.8	7.6
1983				6.7	14.7	14.7	14.7	4.9
1984				12.6	28.7	28.7	28.7	3.8
1985				4.9	11.5	11.5	11.5	3.4
1986				0.8	1.9	1.9	1.9	2.8
1987				1.4	3.6	3.6	3.6	2.7
1988				4.0	10.4	10.4	10.2	3.0
1989				2.2	5.9	5.9	5.9	4.2
1990				1.8	5.1	5.0	4.2	4.0
1991				6.1	17.7	17.7	10.6	4.3
1992				3.0	8.8	8.8	6.7	2.8
1993				3.8	11.6	6.3	0.1	2.4
1994				1.8	5.6			2.4
1995				2.0	6.2			2.3
1996				2.2	7.2			2.3
1997				2.4	7.9			2.2
1998				0.6	2.1			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY73 Dollars Nonrec	Flyaway FY73 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1999				0.2	0.8			2.2
Subtot	4			200.9	342.8	307.6	291.2	
Appropriation: 1506 Aircraft Procurement, Navy								
1977	6	23.6	54.0	81.7	120.3	120.3	120.3	3.8
1978								
1979	14	2.2	75.0	104.2	188.3	188.3	188.3	8.7
1980	13		82.2	104.8	211.3	211.3	211.3	11.8
1981	14		80.9	99.1	222.5	222.5	222.5	11.6
1982	14		71.9	92.9	226.4	226.4	226.4	14.3
1983	11	5.2	56.1	85.2	221.0	221.0	221.0	9.0
1984	11	2.2	51.8	72.7	196.0	196.0	196.0	8.0
1985	10	9.8	50.3	89.7	249.0	249.0	249.0	3.4
1986	14	1.0	69.1	93.3	266.8	266.8	266.8	2.8
1987	14		62.3	77.3	228.8	228.6	228.6	2.7
1988	14	0.2	64.5	78.6	242.7	242.6	242.2	3.0
1989	14		61.5	72.4	232.6	231.7	212.5	4.2
1990	9		59.5	67.5	224.5	224.5	162.9	4.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY73 Dollars Nonrec	Flyaway FY73 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
1991				12.5	42.9	42.9	28.0	4.3
1992	16	0.2	100.0	105.0	367.7	360.1	134.5	2.8
1993	20		128.1	138.4	495.9	430.8	110.3	2.4
1994	12		83.0	81.2	297.5			2.4
1995	4	5.4	32.7	45.6	171.0			2.3
1996		5.2		6.2	23.6			2.3
Subtot	210	55.0	1182.9	1508.3	4228.8	3662.8	3020.6	
Total Then-Year Dollars reflect Amended Budget Submission								
Appropriation: 1205 Military Construction, Navy								
1983				0.4	0.8	0.8	0.8	4.9
1984								
1985								
1986				1.3	3.4	3.4	3.4	2.8
1987								
1988				1.1	3.2	3.2	3.2	3.0
Subtot				2.8	7.4	7.4	7.4	
Navy	214	55.0	1182.9	1712.0	4579.0	3977.8	3319.2	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY73 Dollars Nonrec	Flyaway FY73 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 0350 National Guard & Reserve Equipm,Defense								
1991	10		80.2	82.5	281.9	267.7	22.4	2.9
1992	2		15.6	36.8	129.0	86.1	6.1	2.4
Subtot	12		95.8	119.3	410.9	353.8	28.5	
DoD	12		95.8	119.3	410.9	353.8	28.5	
Grand Total	226	55.0	1278.7	1831.3	4989.9	4331.6	3347.7	

17. Production Rate Data:

a. Production Baseline Rate

The production estimate baseline rate was based on a maximum efficiency rate of two aircraft per month or 24 per year.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	236.8	297.5	580.8	-60.7	+283.3
Procurement Qty	8	12	24	-4	+12
Proc. Unit Cost	29.600	24.792	24.200	+4.808	-0.592
FY 1995					
Procurement Cost	254.6	171.0	608.8	+83.6	+437.8
Procurement Qty	8	4	24	+4	+20
Proc. Unit Cost	31.825	42.750	25.367	-10.925	-17.383
Balance of Proc. (FY 1996 to Complete)	23.6	23.6	23.6	0.0	0.0

The current estimate for FY 95 is the buy-out for the remaining program. The FY 96 funding is for production shutdown only.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	4/4
Procurement	166/166

d. Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 49 - @ Peak Rate: 2.0/mo			
FY 78 Base-Year $	8.400	6.600	9.300
Then Year $	9.900	17.700	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 78 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

18. Operating and Support Costs:

18a. **Operating and Support Costs (Cont'd):**

a. Assumptions and Ground Rules —

The concept of operation is a 16 heavy lift helicopter squadron flying each helicopter 420 hours per year. The costs are the direct costs to support the primary personnel and to operate the aircraft. The depot cost is a summary cost which includes airframe and engine overhaul and component maintenance and repair. The sustaining investment consists primarily of replenishment spares and repair parts. Indirect costs consists of personnel support and the acquisition and training of program personnel. No antecedent system exists for use in comparing O&S costs.

b. Costs — (FY CH/M Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per (Antecedent)
PERSONNEL	6.7	N/A
O&S CONSUMABLES	4.6	N/A
DEPOT MAINTENANCE	1.1	N/A
SUSTAINING INVESTMENT	0.5	N/A
INDIRECT COSTS	0.4	N/A
Total	13.3	N/A

Estimates revised 7 Dec 92 for CH-53 aircraft and 12 Dec 92 for the MH-53s.

18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs — (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&MN	34.2	4.0	3.8	—	42.0
DBOF	0.8	0.1	0.1	—	1.0
Total	35.0	4.1	3.9	—	43.0

N-15 F-14D

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: F-14D TOMCAT

AS OF DATE: December 31, 1992

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1. (U) **Designation and Nomenclature (Preferred Name)**:
F-14D TOMCAT

2. (U) **DoD Component**: Navy

3. (U) **Responsible Office and Telephone Number**:
F-14 PROGRAM OFFICE (PMA-241)
TACTICAL AIRCRAFT PROGRAM
WASHINGTON, DC 20361-1241
COMM (703) 692-8283/5400
CAPT R.D. EVERT
Assigned: May 2, 1[illegible]
AV 222-8283/5400

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. (U) **Program Elements/Procurement Line Items**:

RDT&E:
PE 0205667N Project W1408
PROCUREMENT:
APPN 1506 ICN 0140 (Navy)
APPN 1506 ICN 0141 (Navy)
MILCON:
PE 0204144N

[redacted]

[redacted]

5. (U) **Related Programs**:
F-14A, A-6, EA-6B, E-2C, C-2 (All Grumman Aero Corp produced aircraft), ASPJ, JTIDS, and AIM-54A/C PHOENIX Missile.

6. (U) **Mission and Description**:
The F-14D is a twin-engine, two place, tandem seat, variable sweep wing, supersonic strike fighter capable of performing multiple missions. The combination of the F110-GE-400 engines (same as the F-14B), the available weapons, and the highly sophisticated digital radar (APG-71) allow the F-14 to engage multiple targets simultaneously from sea level to 80,000 feet, achieve air superiority, and provide the Battle group Commander a strike force multiplier. The avionics suite maintains a high level of commonalty with both Navy and Air Force platforms. The AIM-54 PHOENIX missile system with its long range, simultaneous multiple engagement capability provides unequaled fighter performance. The F-14D's beyond visual range engagement capability is unmatched in the world. When coupled with its superior close-in visual dog fighting ability and increased survivability due to dual crew design, the TOMCAT is proven to be the world's premier combat aircraft. The F-14D's air-to-air weaponry includes the AIM-54 PHOENIX, AIM-7 SPARROW, AIM-9 SIDEWINDER missiles and the 20mm M-61A1 cannon. The AIM-120 AMRAAM missile is a planned improvement during the Pre-Deployment Upgrade (PDU) program currently ongoing. PDU also includes air-to-ground functionality with MK-80 series bombs, cluster munitions, and mines. Block 1 Strike Upgrade will bring additional air-to-ground capabilities. Included in the F-14D avionics suite is the Infrared Search and Track system (IRST). The IRST is the most technically advanced sensor deployed on any combat aircraft in the world today. Along with the Television Camera Set (TCS), these two sensors provide an extremely effective passive detect and track capability. The Electronics Warfare suite consists of the ALR-67 Radar Warning Receiver, ASPJ, BOL Chaff dispensing system, and the ALE-39 Countermeasure Dispensing system.

7. (U) **Program Highlights**:
a. (U) Significant Historical Developments --
On December 9,1982, the Navy Decision Resource Board (DRB) determined an upgrade to the F-14A, later designated the F-14D, to be the most cost effective solution for the Navy's anti-air warfare operational requirement. The decision was confirmed by a SECNAV memorandum of July 6, 1983, which delineated required capabilities for the upgraded F-14. The full scale development effort, which began on 31 July 1984, was conducted under a firm-fixed price contract with Grumman Corporation. This program called for production to commence on the F-14D in late FY88. On 17 September 1986 the Secretary of the Navy directed that the procurement of new production F-14D's would be supplemented with F-14A's remanufactured into F-14D's. Avionics and radar development operational testing began in August 1987. The

7a. (U) **Program Highlights (Cont'd)**:

AN-19/APG-71 radar test bed concluded Navy "Quicklook" evaluation on 10 December 1987. The first F-14D prototype aircraft was delivered to the Navy 23 November 1987 and completed 12 test flights assessing the avionics systems. Results of T&E were favorable. The Navy and Grumman definitized the settlement of Grumman's request for equitable adjustment on 01 February 1988. A Navy decision to proceed into FY-88 production was made at the Navy Program Decision Meeting (NPDM) in March of 1988. Pre-deployment Update (PDU) was initiated and contracted for in 1988. PDU includes integration of AMRAAM, air-to-ground bombs, fighter-to-fighter data link, and radar improvements coincident with the first F-14D deployment. A second NPDM was held in October 1988. FY-89 production, long lead authorization for FY-90 and the continuation of Infrared Search and Track (IRST) full scale development was approved. Developmental and operational tests (DT-IIA, OT-IIA, DT-IIB, OT-IIB, and DT-IIC) were successfully conducted. The results of the tests were favorable and CPTEVFOR recommended approval of limited rate production. In accordance with Congressional direction, the F-14D new production was terminated after the FY90 procurement. In February 1991 the Assistant Secretary of the Navy (Research, Development, & Acquisition) with concurrence of the Secretary of the Navy directed the termination of the F-14D(R) program. On 5 March 1991 Congress adopted an amendment for emergency supplemental appropriation. Included in the language were funds for Desert Storm and in section 202, direction was given to obligate the funds appropriated for 12 F-14D(R) aircraft in FY91 no later than 30 days after enactment of this bill. OPEVAL was concluded 14 December 1990. The FY92/93 President's Budget contains no funding for either F-14D new or remanufactured aircraft. The FY91 and FY92 budget contains funds for production line shutdown and support closeout costs. The December 1990 SAR reflected a Program Acquisition Unit Cost (PAUC) breach of 125.11% due to the then planned termination of the F-14D program after 1990. The June 1991 SAR reflected a Current Procurement Unit Cost (CPUC) increase of 22.9% and a six month slip in Full Production Approval (NPDM IIIB). Full production Approval (NPDM IIIB) was deleted from the F-14D program milestones and replaced with Limited Production Approval (NPDM IIIA-3). The final procurement of F-14D(R) aircraft was approved 2 December 1991 at NPDM IIIA-3.

b. (U) Significant Developments Since Last Report -- The Airborne Self-Protection Jammer (ASPJ) Program has been terminated for the convenience of the government. This leaves the F-14D with no defensive electronic countermeasures (DECM) capability.

The F-14D is expected to satisfy the mission requirement.

7c. (U) **Program Highlights (Cont'd)**:

1. (U) Changes Since As Of Date -- None.

8. (U) **Threshold Breaches**:
There are no Acquisition Program Baseline October 1991 breaches or Nunn McCurdy unit cost breaches.

9. (U) **Schedule**:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
SECNAV Direction for F-14D	N/A	JUL 83	JUL 83
FSD Contract Award	JUL 84	JUL 84	JUL 84
DNSARC Review Milestone II	MAR 85	MAR 85	MAR 85
Critical Design Review (Hardware)	JUN 85	JUN 85	JUN 85
Critical Design Review (Software)	AUG 85	AUG 85	AUG 85
First F110 Test Flight	AUG 86	AUG 86	AUG 86
F-14D Advance Acquisition Contract Award	DEC 86	DEC 86	DEC 86
Pilot Production Long Lead Funding Approval	DEC 91		MAR 87
First Avionics/Radar Flight		N/A	JAN 88
NPDM (Pilot Production Approval)	FEB 88	MAR 88	MAR 88
NPDM IIIA-1 (Limited Production Approval)	MAR 89	MAR 89	MAR 89
NPDM IIIA-2 (Limited Production Approval)	MAR 90	MAR 90	MAR 90
Deliver First Production F-14D	MAR 90	MAR 90	MAR 90
TECHEVAL	APR 90	APR 90	APR 90
OPEVAL	JUN 90	JUN 90	JUN 90
BIS 1/	SEP 90	N/A	DEL
NPDM IIIB (Full Production Approval)	OCT 90	N/A	DEL
NPDM IIIA-3 (Limited Production Approval)		DEC 91	DEC 91

(b)(1)

9b. [redacted] Schedule (Cont'd):

(U) NPDM IIIB date changed from Oct 89 to Jan 90 due to Congressional changes made to production plans. NPDM IIIB name changed to NPDM IIIA2. OPEVAL commencement delayed one month to accomodate aircraft preparation for OPEVAL subsequent to TECHEVAL. NPDM IIIC milestone name changed to NPDM IIIB. IOC changed back to original date due to Congressional increase to production quantity and resulting aircraft availability.

(U) NPDM IIIA (Limited Production Approval) delay from Oct 88 to Mar 89 in order to incorporate engine gearbox restraint and to insure it was qualified for carrier operations.

(U) TECHEVAL delayed in order to correct a software discrepancy identified late in the flight test program.

(U) OPEVAL delayed as a result of delayed TECHEVAL and additional time required to complete TECHEVAL.

(U) NPDM IIIB delayed awaiting OPEVAL results.

(U) NPDM IIIB date changed from Mar 91 to Sep 91 due to Congressional changes made to production plans.

(U) Board of Inspection and Survey (BIS) has not indicated the necessity for a BIS test.

(U) Changes based on Approved Acquisition Program Baseline dated 23 October 1991.

(U) NPDM IIIB (Full Production Approval) was deleted from the F-14D program milestones and replaced with NPDM IIIA-3 (Limited Production Approval). The final procurement of F-14D(R) aircraft was approved 2 December 1991 at NPDM IIIA-3.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
NDCP was approved by the Assistant Secretary of the Navy (RE&S), 13 Jan 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 23 October 1991.

10. (U) **Performance Characteristics**:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Weight (lbs)					
Empty No Stores	41977	41700	/ 41977	41865	41865
Max Takeoff	73234	72935	/ 73234	73122	73122
Length (ft)	62	62	/ 62	62	62
Height (ft)	16	16	/ 16	16	16
Span (ft)	64.1	64.1	/ 64.1	64.1	64.1
Spotting Factor (A7=1.0)	1.55	1.55	/ 1.55	1.55	1.55
Direct Maintenance Manhours per flight hour (unscheduled I-level)	6.4	6.4	/ 6.4	N/A	6.4
CDLM Cycle (months)	44	44	/ 44	N/A	44
MFHBF (Total Weapon System) (hrs)	1.8	1.8	/ 1.8	N/A	1.8

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

Changes are a result of projections based on flight test data. Estimates revised to reflect demonstrated performance.

Changes are based on flight test data. Estimates have been revised to reflect demonstrated performance. These values will be used in NATOPS performance.

10c. (U) **Performance Characteristics (Cont'd)**:

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
NDCP was approved by the Assistant Secretary of the Navy (RE&S), 13 Jan 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 23 October 1991.

11. (U) **Total Program Cost and Quantity (Current Estimate in Millions of Dollars)**:

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	1864.9	1803.6	1887.4
Procurement	19664.7	4251.8	4294.0
Airframe	(7702.7)		(1320.0)
Engine	(2929.6)		(327.1)
Avionics	(2216.6)		(162.9)
Other Hardware	(2536.2)		(1253.9)
Total Flyaway	(15385.1)		(3063.9)
Other Weapon Systems Cost	(3039.6)		(559.6)
Peculiar Support	(0.0)		(317.3)
Initial Spares	(1240.0)		(353.2)
Construction (MILCON)	13.9	20.3	12.2
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	21543.5	6075.7	6193.6
Escalation	3478.4	474.1	396.0
Development (RDT&E)	(-20.8)	(-6.5)	(-5.5)
Procurement	(3498.0)	(478.5)	(401.2)
Construction (MILCON)	(1.2)	(2.1)	(0.3)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	25021.9	6549.8	6589.6

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	527	55	55
Total	527	55	55

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

11b. (U) **Total Program Cost and Quantity (Cont'd)**:

c. (U) Quantity --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	0	0
Procurement	527	55	55
Total	527	55	55

f. (U) Foreign Military Sales/International Cooperative Programs -- None.

g. (U) Nuclear Costs -- None.

h. (U) References --

(U) Production Estimate:
NDCP was approved by the Assistant Secretary of the Navy (RE&S), 13 Jan 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 23 October 1991.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary**:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TYS)	6589.6	6574.8	6589.6
(2) Quantity	55	55	55
(3) Unit Cost	119.81	119.54	119.81
c. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TYS)	154.7	154.7	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	154.7	154.7	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) **Cost Variance Analysis**:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1844.1	23162.7	15.1	25021.9
Previous Changes:				
Economic	+17.3	+40.6	+0.4	+58.3
Quantity	-	-12956.7	-	-12956.7
Schedule	-	-123.1	-	-123.1
Engineering	-	+1.4	-	+1.4
Estimating	-31.5	-1563.2	+0.7	-1594.0
Other	-	-	-	-
Support	-	-3833.0	-	-3833.0
Subtotal	-14.2	-18434.0	+1.1	-18447.1
Current Changes:				
Economic	-4.8	-16.6	-0.2	-21.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+72.0	-	-	+72.0
Estimating	-15.2	-111.3	-3.5	-130.0
Other	-	-	-	-
Support	-	+94.4	-	+94.4
Subtotal	+52.0	-33.5	-3.7	+14.8
Total Changes	+37.8	-18467.5	-2.6	-18432.3
Current Estimate	1881.9	4695.2	12.5	6589.6

13a. (U) **Cost Variance Analysis (Cont'd)**:

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1864.9	19664.7	13.9	21543.5
Previous Changes:				
Quantity	-	-10528.7	-	-10528.7
Schedule	-	-99.2	-	-99.2
Engineering	-	+1.3	-	+1.3
Estimating	-28.4	-1595.3	+1.6	-1622.1
Other	-	-	-	-
Support	-	-3134.1	-	-3134.1
Subtotal	-28.4	-15356.0	+1.6	-15382.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+61.0	-	-	+61.0
Estimating	-10.1	-99.3	-3.3	-112.7
Other	-	-	-	-
Support	-	+84.6	-	+84.6
Subtotal	+50.9	-14.7	-3.3	+32.9
Total Changes	+22.5	-15370.7	-1.7	-15349.9
Current Estimate	1887.4	4294.0	12.2	6193.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Changes due to revised economic escalation rates.

Estimating: Increase due to program restructure.
Increase is a result of procurement of laboratory equipment.
Decrease is due to savings resulting from the Defense Management Review (DMR).

Procurement

Economic: Revised escalation rates.

Quantity: Decrease in number of F-14D aircraft to be procured from 527 to 419 in FY-89. Increase in FY-90 due to increase in number of F-14D aircraft to be procured

13b. (U) Cost Variance Analysis (Cont'd):

from 419 to 437.
Decrease due to deletion of 394 aircraft from 437 to 43 and program termination in FY91.
Increase due to aircraft quantity change from 43 to 55.

Schedule: Decrease due to reduction in number of F-14D new production aircraft to be delivered to the fleet and earlier deliveries of aircraft beginning in FY-90.
Decrease is due to deletion of 394 aircraft from 437 to 43 and program termination in FY91

Engineering: Increase for engineering changes for OPEVAL deficiencies.
Decrease is a result of a kroma display engineering change.

Estimating: Increase is due to production shutdown costs, increased radar cost resulting from the nullification of the negotiated contract price, sunk costs resulting from the discontinuation of the advance acquisition contract and increased GFE costs. Additionally, there was an increase in labor and overhead rates and CFE costs. Decrease is due to the deletion of 394 aircraft from 437 to 43 and program termination in FY91. Increase is due to aircraft quantity change from 43 to 55.
Increase is the result of shutdown costs. Decrease is due to correction of previous variances to reconcile flyaway costs. Decrease is due to refinement of program shutdown costs.

Support: Decrease reflects budget decrease to partially fund costs associated with cancellation of F-14D new production and reduction in outyear support requirements.
Decrease is due to deletion of 394 aircraft from 437 to 43 and program termination in FY91.
Increase is due to aircraft quantity change from 43 to 55 and correction of previous variances to reconcile support costs. Increase is due to payback of Iranian assets (spare engines) and additional procurement of GFE spares.

MILCON

Economic: Increase due to revised escalation rates.

Estimating: Decrease due to refinement of estimate.
Increase due to refinement of estimate at Oceana and Miramar.
Decrease is due to deletion of FY 94 funds for the Fleet Replacement Air Maintenance Personnel (FRAMP)

13b. (U) **Cost Variance Analysis (Cont'd)**:

at Oceana.
Decrease is due to deletion of FY 93 funds for an addition to Weapon System Trainer Building at Oceana.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-7.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.2
Adjustment for Current & Prior Inflation. (Estimating)	+1.3	+1.9
Addition of FY 1994 increment of Block I Strike Upgrade Program. (Engineering)	+61.0	+72.0
Reductions in Pre-Deployment Update Program (Estimating)	-11.4	-17.1
RDT&E Subtotal	+50.9	+52.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-15.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	-1.3
Adjustment for Current & Prior Inflation. (Estimating)	+12.4	+14.9
Adjustment of estimate for production shutdown and support closeout costs (Estimating)	-34.1	-40.3
Correction of previous categorization (Estimating)	-77.6	-85.9
Correction of previous categorization (Support)	+77.6	+85.9

13c. (U) **Cost Variance Analysis (Cont'd)**:

	(Dollars in Millions) Base-Year	Then-Year
Increase initial spares requirement (Support)	+7.0	+8.5
Procurement Subtotal	-14.7	-33.5
(3) MILCON		
Economic Adjustment for Negative Program Change (Economic)	N/A	-0.2
Cancellation of the Oceana Site construction. (Estimating)	-3.3	-3.5
MILCON Subtotal	-3.3	-3.7

14. (U) **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
63.22	-0.53	-8.61	-1.53	0.44	-8.88	--	3.37	-15.74	47.48

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
47.48	0.67	171.89	-2.24	1.34	-31.35	--	-67.97	72.34	119.81

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --

(U) FY89 F-14D PRODUCTION:	Initial Contract Price Target	Ceiling	Qty
GRUMMAN AEROSPACE CORP, BETHPAGE, NY N00019-88-C-0025, FFP Award: May 1, 1988 Definitized: October 1, 1989	$504.3	N/A	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$504.3	N/A	12	$504.3	$504.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

NOTE: THIS WILL BE THE LAST TIME THIS CONTRACT WILL BE REPORTED--AIRCRAFT DELIVERED.

(U) FY-90 F-14D/D(R) PROD:	Initial Contract Price Target	Ceiling	Qty
GRUMMAN AEROSPACE CORP, BETHPAGE, NY N00019-88-C-0276, FFP Award: January 1, 1989 Definitized: July 9, 1990	$1064.3	N/A	24

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1064.3	N/A	24	$1064.3	$1064.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

NOTE: THIS WILL BE THE LAST TIME THIS CONTRACT WILL BE REPORTED -- DELIVERIES COMPLETE.

(U) FY-90 F-14D ENGINE:	Initial Contract Price Target	Ceiling	Qty
GENERAL ELECTRIC, CINCINNATI,, OH F33657-84-C-2011, FFP Award: February 28, 1989 Definitized: April 30, 1990	$162.9	N/A	48

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$162.9	N/A	48	$162.9	$162.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

NOTE: THIS WILL BE THE LAST TIME THIS CONTRACT WILL BE REPORTED -- CONTRACT COMPLETE.

(U) FY-91 F-14D AIRFRAME:
GRUMMAN AEROSPACE CORP, BETHPAGE, NY
N00019-90-C-0009, FFP
Award: June 7, 1990
Definitized: July 24, 1992

Initial Contract Price		
Target	Ceiling	Qty
$265.0	N/A	12

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$268.0	N/A	12	$268.0	$268.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY-88 F-14D PRODUCTION:
Grumman Aerospace Corp, BETHPAGE, NY, NY
N00019-87-C-0131, FFP
Award: November 1, 1987
Definitized: September 30, 1988

Initial Contract Price		
Target	Ceiling	Qty
$431.0	$0.0	7

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$431.0	$0.0	7	$431.0	$431.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

NOTE: THIS WILL BE THE LAST TIME THIS CONTRACT WILL BE REPORTED -- DELIVERIES COMPLETE.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 64.7% (11 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 97.6% ($6434.5 / $6589.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1726.8	72.0	27.9	55.2	1881.9
Procurement	4695.2	-	-	-	4695.2
MILCON	12.5	-	-	-	12.5
O&M	-	-	-	-	-
Total	6434.5	72.0	27.9	55.2	6589.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1983				7.7	6.5	6.5	6.5	4.9
1984				46.8	40.7	40.7	40.7	3.8
1985				308.6	276.7	276.7	273.6	3.4
1986				377.7	348.4	348.4	344.7	2.8
1987				275.6	261.8	261.8	261.6	2.7
1988				170.9	167.8	167.8	166.1	3.0

16c. (U) **Program Funding Summary (Cont'd)**:

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1989				148.7	152.1	152.0	150.2	4.2
1990				110.6	117.8	117.8	110.0	4.0
1991				108.6	119.8	119.8	119.5	4.3
1992				101.7	115.1	115.1	63.5	2.8
1993				103.6	120.1	68.6	8.8	2.4
1994				60.7	72.0			2.4
1995				23.0	27.9			2.3
1996				14.8	18.3			2.3
1997				9.1	11.6			2.2
1998				8.8	11.4			2.2
1999				10.5	13.9			2.2
Subtot				1887.4	1881.9	1675.2	1545.2	
Appropriation: 1506 Aircraft Procurement, Navy								
1987		131.5		133.2	131.0	131.0	131.0	2.7
1988	7	120.9	323.9	598.5	613.9	553.9	516.1	3.0
1989	12	67.2	586.1	900.4	960.5	909.4	884.4	4.2
1990	24	216.3	987.1	1391.5	1535.9	1418.4	1300.1	4.0

16c. (U) **Program Funding Summary (Cont'd)**:

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
1991	12	203.9	303.3	981.2	1114.1	837.7	467.0	4.3
1992		51.8		159.2	185.1	62.0	19.7	2.8
1993		71.9		130.0	154.7	23.5	1.6	2.4
Subtot	55	863.5	2200.4	4294.0	4695.2	3935.9	3319.9	
Appropriation: 1205 Military Construction, Navy								
1988				10.8	11.0	10.6	10.6	3.0
1989								4.2
1990				1.4	1.5	0.8	0.8	4.0
Subtot				12.2	12.5	11.4	11.4	
Grand Total	55	863.5	2200.4	6193.6	6589.6	5622.5	4876.5	

17. (U) **Production Rate Data**:

a. (U) Production Baseline Rate

NPDM IIIB (Full Production Approval) was deleted from the F-14D program milestones and replaced with NPDM IIIA-3 (Limited Production Approval), therefore no full rate production baseline was established.

17b. (U) **Production Rate Data (Cont'd)**:

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

FY 1991 was the last production buy year.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	45/45

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs**:

a. (U) Assumptions and Ground Rules --

1.	System life	20 Years
2.	Utilization Rate	300 FH/YR
3.	# of Aircraft/Squadron	10
4.	Fuel $/Gallon	$.71
5.	Gallons/FH	1297.37
6.	SDLM Interval	54.9 Months
7.	Officers/Squadron	39
8.	Enlisted/Squadron	249
9.	Antecedent Aircraft	F-14A
10.	O&S estimate date	Apr 92

18b. (U) Operating and Support Costs (Cont'd):

c. (U) Costs -- (FY F-14 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per F-14A Squadron
PERSONNEL	8.4	8.4
O & I CONSUMABLES	9.6	8.0
DIRECT DEPOT MAINTENANCE	3.5	3.9
SUSTAINING INVESTMENT	2.3	1.6
OTHER DIRECT COSTS	0.0	0.0
INDIRECT COSTS	0.5	0.5
Total	24.3	22.4

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&MN	16.6	8.7	4.2	---	29.5
INDUSTRIAL FUND	12.3	2.2	4.9	---	19.4
Total	28.9	10.9	9.1	---	48.9

AF-11 F-16

UNCLASSIFIED

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: F-16 FIGHTING FALCON

AS OF DATE: December 31, 1992

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MAY 18 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
F-16 Multimission Fighter (Fighting Falcon)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

Aeronautical Systems Center	Col Ronald Kadish
F-16 System Program Office	Assigned: August 1, 1992
WPAFB, OH 45433-7205	AV 785-6151 COMM (513)255-6151

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0207133F
PROCUREMENT:
APPN 3010 ICN F016AD (Air Force)

5. Related Programs:
Advanced Medium Range Air-to Air Missile (AMRAAM), Low Altitude Navigation and Targeting Infrared for Night (LANTIRN), Global Positioning System (GPS), 30MM Gun Pod (GPU 5/A), F-16 Mid-Life Update, Improved Data Modem (IDM), Seek Eagle, High Speed Antiradiation Missile (HARM), Advanced Tactical Air Reconnaissance System (ATARS), Increased Performance Engine (IPE), Night Attack, F-16 Close Air Support (CAS) Retrofit, Positive Pressure Breathing (PPB), AN/ALR 56 Advanced Radar Warning Receiver (ARWR), Falcon-Up Structural Improvements, Modified Modular Mission Computer (MMC),

SAF/PAS

93-345-T

93-0550

5. Related Programs (Cont'd):

and ALE-47 Countermeasures Dispenser Set (CMDS).

6. Mission and Description:

The F-16 Multimission Fighter is a single engine, lightweight, high performance aircraft, with the newest block of aircraft powered by a 29,000 pound thrust class augmented turbofan Increased Performance Engine (IPE). It is a tactical fighter aircraft with an air-to-air and air-to-surface, multi-role capability that can be deployed from the continental U.S. to any possible trouble area of the world with minimum enroute support and with high reliability and simplified maintenance procedures to assure successful operation under austere conditions. The F-16 Program is part of the continuing modernization of U.S. tactical fighters to reverse the upward trend in higher total investment and operating and support costs. The F-16 provides a modern, low cost addition to both active and reserve tactical fighter forces. The F-16 is employed in a complementary role to the F-15 in counter air missions, and to supplement the surface attack capabilities of the F-15E, F-117, F-111 and A-10.

7. Program Highlights:
   a. Significant Historical Developments --

The F-16 received Secretary of Defense approval for program initiation in August 1971. DSARC I approval occurred in December 1974 and the full scale development contract was awarded in January 1975. The United States and four European countries (Belgium, Denmark, The Netherlands, and Norway) signed a memorandum of understanding for F-16 co-production in June 1975. Approval for long lead procurement was given at DSARC III A in January 1977 and production approval was given at DSARC III B in October 1977. The first aircraft delivery to Tactical Air Command occurred in September 1978 and Hill AFB activated the first F-16 squadron in February 1979. The USAF initial operational capability was reached in October 1980. In March 1985, the last of 785 F-16 A/B aircraft were delivered to the USAF. Program Management Responsibility Transfer (PMRT) from Air Force Systems Command to Air Force Logistics Command, for the F-16A/B aircraft, occurred on 1 October 1985. Air Force Systems Command retains responsibility for the continuing F-16C/D program. The 2000th F-16 was delivered to the Republic of Singapore Air Force in February 1988. We formally surpassed the three-digit radar reliability threshold in terms of Mean Flight Time Between Maintenance Actions in September 1988 with a three month moving average of 103 hours. The USAF F-16 world wide fleet surpasses 2.4 Million flying hours and remains the safest single engine fighter in USAF history. Both the F-16A/B as well as the C/D series continue to meet or exceed operational and supportability requirements. The High-Speed

7a. Program Highlights (Cont'd):

Antiradiation Missile (HARM) completed phase II flight test program for the integration of HARM onto the Block 30 aircraft. The 30MM gun pod (GPU-5A) accelerated program was completed in June 1989. Integration was accomplished at the 174th TFW at Syracuse, New York, where all their F-16s are capable of employing the GPU-5A weapon.

On 26 November 1990, the Defense Acquisition Board (DAB) conducted a Milestone IV review to consider the USAF request to proceed with procurement of an F-16 variant to fulfill the Close Air Support (CAS) and Battlefield Air Interdiction (BAI) missions. Based on the USAF's recommendation, the DAB decided that the F-16 C/D Block 30 aircraft would be upgraded to a CAS/BAI configuration by retrofit modifications. The planned Block 30 CAS/BAI configuration included Improved Jam-Resistant Radio, Pave Penny Pod, Improved Data Modem, and 30MM Gun Pod. As a result of the FY91 Defense Authorization and Appropriation Acts, 1991 marked the first year in the history of the program that the heretofore stable production of the F-16 was reduced.

The 1992 Defense Authorization and Appropriation Acts reduced the F-16 production rate further to the point F-16 multiyear contracting did not meet required cost savings. The remaining multiyear III efforts were converted to annual buys. Delivery of aircraft from the multiyear contract began in June 1991. Successful operational deployment of Low Altitude Night Targeting Infrared Navigation (LANTIRN) pods began in October 1991. First delivery of Block 50 configured aircraft occurred in October 1991, as scheduled. The 3000th F-16 was delivered for Egypt on 30 December 1991. The F-16 program was one of 21 programs selected to implement a single manager organization under the Integrated Weapon System Management (IWSM) initiative. As of October 1991 the F-16 Program Director has responsibility for the total F-16 program, including the F-16 A/B program which was previously transferred to Ogden Air Logistics Center.

b. Significant Developments Since Last Report --
The F-16 Production Contract for FY90/91 was awarded on 17 January 1992, and the Long Lead Continuation Contract for FY92/93 was awarded on 31 January 1992. A total of 52 F-16C/D aircraft were delivered to the USAF during Calendar Year 1992. Delivery delays were prominent due to significant production problems. Numerous quality initiatives were implemented and delivery schedules were adjusted accordingly to reflect a more realistic forecast of General Dynamics production capabilities. Meanwhile, budget cuts and changing priorities significantly redirected the USAF F-16 program. Planned F-16A/B modifications were deleted and C/D production was extended, while the Modular Mission Computer and Mid-Life Update efforts were focused

7b. Program Highlights (Cont'd):

towards a core avionics architecture to take F-16 into the 21st century. The Close Air Support mission was redirected by the Air Force from the Block 30 to the Block 40 aircraft, but program execution remains on hold pending further Air Force justification to OSD. Major Force Structure decisions also caused revamping of the F-16 Reconnaissance configuration. Program restructure was underway as of December 31, 1992.

The program office began planning for the recently directed FY94 C/D production and has implemented the Integrated Acquisition Strategy Process for future acquisitions. This process should significantly improve the understanding of requirements and expectations throughout the entire F-16 community and provide for more efficient and cost effective contract process improvements, as well as, customer understanding of the products to be delivered.

Block 40 Production Tape Three (3)'s Developmental Test & Evaluation (DT&E) was completed and fielded in April 1992. Block 30 Software Capability Upgrade (SCU) No. One (1)'s DT&E was completed and core tape fielded September 1992. Block 30 SCU No. Two (2) detailed DT&E test planning was completed at Hill AFB, UT in September 1992. SCU #2 DT&E is scheduled to be completed in mid-1993. Block 50 Production Tape Two (2)'s DT&E flight test program began on 2 January 1992. As of 1 December 1992, Edwards AFB Consolidated Test Facility (CTF) DT&E test team had successfully completed 80% of overall program runs and is on schedule to complete DT&E by mid-April 1993. Block 40 Production Tape Four (4)'s DT&E began in April 1992. As of 1 December 1992, 98% of 40P4's priority runs and 70% of overall program runs have been completed.

Block 30 SCU #1 Follow on Operational Test & Evaluation (FOT&E) was completed in June 1992. Block 40P3 FOT&E was completed in November 1992. Block 40P4 FOT&E began late November 1992. Block 50P1 (Phase One) Operational Test & Evaluation (OT&E) is scheduled to begin February 1993 and last for six (6) months. Block 50P2 (Phase II) OT&E is in the planning stage and will be accomplished by USAF Air Warfare Center (AWC) in calendar year 1994. Block 30 SCU #2 OT&E is in the planning stage and will be flown by the 57TG at Nellis AFB NV.

The F-16 continues to meet its current mission requirements.

c. Changes Since As Of Date --
The last Block 40 aircraft was delivered to Pope AFB, NC Feb 93.

8. Threshold Breaches:
There are some schedule and performance APB breaches to the Acquisition Program Baseline (dated October 23 1989). A deviation

8. Threshold Breaches (Cont'd):

report was submitted to SAF/AQX through the Program Executive Officer (PEO) 23 Mar 93. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Complete Competitive Flight Test	DEC 74	DEC 74	DEC 74
Award Development Contract	JAN 75	N/A	JAN 75
Milestone II (DSARC)	MAR 75	APR 75	APR 75
Radar Contractor Selection	JAN 76	N/A	NOV 75
First Full Scale Development Flight	DEC 76	N/A	DEC 76
Milestone IIIA (DSARC)	JAN 77	JAN 77	JAN 77
Milestone IIIB (DSARC)	SEP 77	OCT 77	OCT 77
First Flight, Production Aircraft	AUG 78	N/A	AUG 78
First F-16 A/B Delivery to TAF	SEP 78	SEP 78	SEP 78
Deliver 100th Production Aircraft to USAF	MAY 80	N/A	MAY 80
First F-16 C/D Delivery to TAF	DEC 84	DEC 84	DEC 84
F-16 A/B Program Management Responsibility Transfer (PMRT) to AFLC	N/A	OCT 85	OCT 85
First Delivery Block 40	DEC 88	DEC 88	DEC 88
Multiyear III Contract (long lead)	N/A	JUN 89	JUN 89
F-16 C/D Organic Avionics Integrated Support Facility (AISF) Capability (First 10%)	N/A	SEP 89	SEP 89
Begin MSIP I (Block 15)	FEB 80	N/A	FEB 80
Program Direction -- MSIP II	DEC 80	N/A	DEC 80
Begin MSIP II (Block 25/30)	MAY 81	N/A	MAY 81
MSIP I First Delivery	NOV 81	N/A	NOV 81
Deliver First F-16C to USAF	JUL 84	N/A	JUL 84
LANTIRN Navigation Pod Install	OCT 89	N/A	OCT 89
LANTIRN Target Pod Install	OCT 90	N/A	OCT 90
LANTIRN Navigation Pod Ready for Training	N/A	JAN 90	JAN 90
LANTIRN Target Pod Ready for Training	N/A	JAN 91	JAN 91
First Delivery Block 50	OCT 91	OCT 91	OCT 91
Improved Data Modem (IDM)	N/A	OCT 92	FEB 93
Final Block 40	N/A	NOV 92	FEB 93(Ch-1)
Multiyear IV Contract (long lead)	N/A	NOV 92	N/A
Last Presently Programmed F-16 C/D Delivery	N/A	SEP 99	MAY 01(Ch-2)

Reference Multiyear IV contract (Long Lead) milestone, due to program changes, there will be no Multiyear IV (Long Lead) contract.

9b. Schedule (Cont'd):

b. Previous Change Explanations --

F-16A/B Program Management Responsibility Transfer (PMRT) date.

F-16C/D Integration of F-16C/D MSIP milestones into the December 1988 SAR.
First Delivery Block 40
LANTIRN Nav Pod Inst
LANTIRN Tgt Pod Inst
First Block 50 delivery

New milestones as reflected in the 23 Oct 89 APB.

FY89 Defense Authorization Act, specifically contained language approving the F-16 Multiyear III procurement request.

Automatic Target Handoff Datalink System was renamed Improved Data Modem (IDM), and the current estimate changed to Feb 93.

c. Current Change Explanations --

(Ch-1): Current Estimate for "Final Block 40" changed from Jul 92 to Feb 93 because production deliveries were delayed due to numerous quality issues that impacted all production floor performance. Schedules were adjusted to accommodate quality initiatives.

(Ch-2): Current Estimate for the "Last Presently Programmed F-16 C/D Delivery" changed from Oct 94 to May 98 because current Program Management Directive (PMD), 6075 (69) 20 May 93, directs F-16 aircraft procurement through FY95.

d. References --

Development Estimate:
President's FY77 Budget dated 19 January, 1976 and DCP #143 dated 10 March 1975 (For Coordination).

Approved Program:
AFAE Approved Acquisition Program Baseline dated 23 October 1989.

10. **Performance Characteristics:**

a. Performance --		DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
F-16 C/D						
Sustained Turn Rate, Air-to-Air Loading, 30000 ft, Max power 1/						
Mach 1.2 (deg/sec)						
Block 25/30/32	4/	5.1	5.1	/ 5.1	5.4	5.4
Block 40/42	5/	N/A	4.5	/ 4.5	N/A	N/A
Block 50/52	6/	N/A	5.1	/ 5.1	N/A	N/A
Mach 0.9 (deg/sec)						
Block 25/30/32	4/	7.3	7.3	/ 7.3	7.3	7.3
Block 40/42	5/	N/A	6.5	/ 6.5	N/A	N/A
Block 50/52	6/	N/A	6.7	/ 6.7	N/A	N/A
Sustained Turn Rate, Air-to-Ground Loading, 200 ft, MIL power 2/						
500 KCAS (deg/sec)						
Block 25/30/32	4/	6.6	6.6	/ 6.6	7.1	7.1
Block 40/42	5/	N/A	5.5	/ 5.5	N/A	N/A
Block 50/52	6/	N/A	7.5	/ 7.5	N/A	N/A
Total Mission Radius (NM)						
Air-to-Air Loading 3/						
Block 25/30/32	4/	420	420	/ 420	491	491
Block 40/42	5/	N/A	310	/ 310	N/A	N/A
Block 50/52	6/	N/A	345	/ 345	N/A	N/A
Air-to-Ground Loading Hi-Lo-Lo-Hi 2/						
Block 25/30/32	4/	465	465	/ 465	476	476
Block 40/42	5/	N/A	385	/ 385	N/A	N/A
Block 50/52	6/	N/A	385	/ 385	N/A	N/A
Air-to-Ground Loading Lo-Lo-Lo-Lo 2/						
Block 25/30/32	4/	295	295	/ 295	318	318
Block 40/42	5/	N/A	270	/ 270	N/A	N/A
Block 50/52	6/	N/A	260	/ 260	N/A	N/A
Max Speed, Air-to-Ground Loading, 200 ft, MIL power 2/						

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
With Weapons (KCAS)				
Block 25/30/32 4/	565	565 / 565	568	568
Block 40/42 5/	N/A	555 / 555	N/A	N/A
Block 50/52 6/	N/A	590 / 590	N/A	N/A
Without Weapons (KCAS)				
Block 25/30/32 4/	580	580 / 580	592	592
Block 40/42 5/	N/A	575 / 575	N/A	N/A
Block 50/52 6/	N/A	600 / 600	N/A	N/A
Combat Reliability Rate (Sorties flown divided by Ground aborts + Code 3 in-flight breaks)	N/A	7.5 / 6.3	6.7	6.7
Fix Rate (Percentage of breaks repaired within 8 hrs)	N/A	90 / 85	86	86
Mobility Requirement (C-141 equivalent loads to deploy one squadron)	N/A	12 / 14	14	14
Manpower Requirement (manpower authorizations per aircraft)	N/A	19 / 21.6	21	21
System Availability (measured by meeting or exceeding TAC standards as follows:)				
Mission Reliability (%)	85	N/A / N/A	89	89
Mission Capable (MC) (%)	N/A	85 / 85	89	90
Not Mission Capable/ Maintenance (NMCM) (%)	N/A	8 / 8	6.4	6.4
Not Mission Capable/ Supply (NMCS) (%)	N/A	7 / 7	6	6
Abort Rate (%)	N/A	5 / 5	N/A	N/A

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mean Flight Time Between Maintenance Actions (MFTBMA) (hrs)	3.0	N/A	/ N/A	3.5	3.5
Air-to-Air Mission					
No./Wt. per Missile	2/195	N/A	/ N/A	2/195	2/195
No./Wt. of Ammo	500/280	N/A	/ N/A	500/280	500/280
Air-to-Air Mission					
No./wt. per AIM-9L	2/195	N/A	/ N/A	2/195	2/195
No./wt. of AMRAAM	2/328	N/A	/ N/A	N/A	2/345
No./wt. of Ammo	500/280	N/A	/ N/A	500/280	500/280
Air-to-Ground Mission 10/					
No./wt. of Weapon	2/1980	N/A	/ N/A	2/1980	2/1980
No./wt. per Missile	2/195	N/A	/ N/A	2/195	2/195
No./wt. of Ammo	500/280	N/A	/ N/A	500/280	500/280
Air-to-Ground Mission 11/					
No./wt. of Weapon	4/1856	N/A	/ N/A	4/1856	4/1856
No./wt. per Missile	2/195	N/A	/ N/A	2/195	2/195
No./wt. of Ammo	500/280	N/A	/ N/A	500/280	500/280
F-16 A/B					
Sustained Turn Rate, Air-to-Air, 30,000 ft Max Power. 1/					
Mach 1.2					
Degrees per second	6.5	N/A	/ N/A	6.4	6.0
(Max Attainable Gs)	4.3	N/A	/ N/A	4.3	4.0
Mach 0.9					
Degrees per second	8.7	N/A	/ N/A	8.1	8.1
(Max Attainable Gs)	4.3	N/A	/ N/A	4.1	4.1
Mission Reliability (%)	85	N/A	/ N/A	87	87
Mean Flight Time Between Maintenance Action (MFTBMA) (hrs)	1.75	N/A	/ N/A	3.05	3.50
Air-to-Air Mission					
No./wt. per Missile	2/169	N/A	/ N/A	2/195	2/195
No./wt. per Ammo	500/280	N/A	/ N/A	500/280	500/280
Air-to-Ground Mission					

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
No./wt. of Weapon	2/2000	N/A	/ N/A	2/1970	2/1970
No./wt. of ECM Pod	1/392	N/A	/ N/A	1/675	1/675
Max Sustained Speed Sea Level, Air-to-Air (Mach)	1.2	N/A	/ N/A	1.2	1.2
Max Sustained Speed Altitude, Air-to-Air (Mach)	2.0	N/A	/ N/A	2.0	2.0
Design Mission Combat Radius					
Air-to-Air (NM)	600	N/A	/ N/A	655	655
Air-to-Ground (NM)	550	N/A	/ N/A	666	666

(1) Full ammo, (2) AIM-9L
(2) Full ammo, (2) AIM-9L, (2) 370 Gal Tanks, (2) Mk-84, (1) ALQ-131
(3) Full ammo, (2) AIM-9L, (2) 370 Gal Tanks
(4) Performance characteristics for Blocks 25/30/32 are based on F-16C, Block 25.
(5) Performance characteristics for Blocks 40/42 are based on F-16C, Block 42 and these goals reflect an additional 2770 lbs basic flight design gross weight.
(6) Performance characteristics for Blocks 50/52 are based on F-16C, Block 50 and these goals reflect an increased thrust from the increased performance engine (IPE).
(7) Measured by meeting or exceeding ACC standards.
(8) Air-to-Air Loading 1: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks
(9) Air-to-Air Loading 2: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks, 2 AMRAAM
(10) Air-to-Ground Loading 1: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks, 2 Mk-84, 1 ALQ-131
(11) Air-to-Ground Loading 2: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks, 4 AGM-65/TRL, LANTIRN Pods

b. Previous Change Explanations --

F-16 A/B

(1) Sustained turn rates changed due to increased maximum Take Off Gross Weight (TOGW) to accommodate an increase in payload requirements.

(2) Mission Reliability changed to reflect decrease in average

10b. Performance Characteristics (Cont'd):
mission duration from 3.3 hours to 2.3 hours.

(3) Mean Flight Time Between Maintenance Actions (MFTBMA) changed to reflect improved hardware reliability from active program to minimize number of parts. Current estimate changed to reflect maintenance man hour data.

(4) Air-to-Air mission was based on Development Estimate of missile weight of AIM-9J; current estimate based on AIM-9L.

(5) Air-to-Ground mission was based on Development Estimate of weapon weight; current estimate reflects measured weight. Development estimate of pod weight based on ALQ-119-3; current estimate based on ALQ-131.

(6) Design Mission Combat Radius exceed DCP goals for both Air-to-Air and Air-to-Ground in the Current Estimate and Demonstrated Performance.

(7) MFTBMA changed as Reliability performance continues to improve.

(8) Design Mission Combat Radius was inadvertently placed in the F-16C/D section in the December 31, 1986 SAR; it pertains to the F-16A/B.

F-16C/D

(1) Air-to-Air mission AMRAAM weight changed to 345 for current estimate.
(2) Mission Reliability performance continues to improve.
(3) Air-to-Ground mission improved relative to earlier analysis results.
(4) MFTBMA improvement based on DO-56/MODAS failure and maintenance manhour data.
(5) Sustained Turn Rate, Mission Reliability, Total Mission Radius, and Max Speed Air-to-Ground values resulted from completion of F-16 C/D performance flight test and analysis.
(6) Mission Reliability Data added to allow comparison with F-16 A/B.
(7) Air-to-Air total mission radius development estimate and approved program goal/threshold were changed to correct a typographical error in the DAE Baseline of 17 February 1988.
(8) New performance characteristics as reflected in the 23 Oct 89 APB.

c. Current Change Explanations -- None.

10d. Performance Characteristics (Cont'd):

d. References --

Development Estimate:
President's FY77 Budget dated 19 Jan 76 and DCP #143 dated 10 Mar 75 (For Coordination).

Approved Program:
AFAE Approved Acquisition Program Baseline dated 23 October 1989.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	578.6	1078.1	1143.9
Procurement	3798.2	19556.0	15063.6
Airframe	(1375.4)		(4919.3)
Engine	(911.3)		(2729.3)
Electronics	(539.6)		(2611.9)
Armament	(171.6)		(473.9)
Sys/Proj Mgt	(33.8)		(583.6)
Total Flyaway	(3031.7)		(11318.0)
			(118.7)
Peculiar Support	(435.2)		(2361.5)
Initial Spares	(331.3)		(1265.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	4376.8	20634.1	16207.5
Escalation	1677.7	31744.0	22853.5
Development (RDT&E)	(80.5)	(643.5)	(776.2)
Procurement	(1597.2)	(31100.5)	(22077.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6054.5	52378.1	39061.0
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	650	2999	2237
Total	650	2999	2237

Excludes eight (8) RDT&E aircraft from the SAR baseline and from the current estimate that are not fully configured end items.

c. Foreign Military Sales/International Cooperative Programs --
(1) *348 for European Participating Governments (EPG) Program for a total cost of $5,351.9M (Then Year) which includes 116 @ $1,646.0M

11c. Total Program Cost and Quantity (Cont'd):
for Belgium, 58 @ $850.9M for Denmark, 102 @ $1,614.2M for the Netherlands, and 72 @ $1,273.1M for Norway.

(2) *44 follow-on aircraft @ $877.7M (Then Year) for Belgium.

(3) * 12 follow-on aircraft @ $150.1M (Then Year) for Denmark.

(4) * 111 follow-on aircraft @ $1,434.3M (Then Year) for the Netherlands.

(5) * 2 follow-on aircraft @ $25.5M (Then Year) for Norway.

(6) 174 @ $4,439.9M (Then Year) for Egypt.

(7) 210 @ $4,422.0M (Then Year) for Israel.

(8) 40 @ $758.0M (Then Year) for Korea.

(9) 120 @ $2,046.9M (Then Year) for Korean Fighter Program (KFP).

(10) 111 @ $2,421.1M (Then Year) for Pakistan.

(11) 160 @ $5,140.5M (Then Year) for Turkey.

(12) 24 @ $441.2M (Then Year) for Venezuela.

(13) 19 @ $524.4M (Then Year) for Singapore.

(14) 36 @ $786.3M (Then Year) for Thailand.

(15) 12 @ $282.0M (Then Year) for Indonesia.

(16) 12 @ $357.9M (Then Year) for Bahrain.

(17) 20 @ $398.1M (Then Year) for Portugal.

(18) 150 @ $5,770.7M (Then Year) for Taiwan.

* EPG procurements are technically not Foreign Military Sales, but constitute an international cooperative program with the U.S. Government.

d. Nuclear Costs -- None

11e. Total Program Cost and Quantity (Cont'd):

e. References --

Development Estimate:
President's FY77 Budget dated 19 January, 1976 and DCP #143 dated 10 March 1975 (For Coordination).

Approved Program:
AFAE Approved Acquisition Program Baseline dated 23 October 1989.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	39061.0	37611.2	39061.0
(2) Quantity	2237	2189	2237
(3) Unit Cost	17.461	17.182	17.461
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	704.2	704.2	796.7
Less CY Adv Proc	67.7	67.7	70.8
Plus PY Adv Proc	125.0	125.0	67.7
Net Total	761.5	761.5	793.6
(2) Quantity	24	24	24
(3) Unit Cost	31.729	31.729	33.067

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	659.1	5395.4	0.0	6054.5
Previous Changes:				
Economic	+44.4	-43.4	-	+1.0
Quantity	-	+13958.8	-	+13958.8
Schedule	+0.1	+2305.4	-	+2305.5
Engineering	+1589.1	+8246.4	-	+9835.5
Estimating	+211.2	-1982.2	-	-1771.0
Other	+20.6	+35.8	-	+56.4
Support	+154.9	+7015.6	-	+7170.5
Subtotal	+2020.3	+29536.4	-	+31556.7
Current Changes:				
Economic	-35.9	-26.5	-	-62.4
Quantity	-	+473.1	-	+473.1
Schedule	-	+147.4	-	+147.4
Engineering	-580.0	+910.5	-	+330.5
Estimating	-143.4	-121.4	-	-264.8
Other	-	-	-	-
Support	-	+826.0	-	+826.0
Subtotal	-759.3	+2209.1	-	+1449.8
Total Changes	+1261.0	+31745.5	-	+33006.5
Current Estimate	1920.1	37140.9	-	39061.0

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	578.6	3798.2	0.0	4376.8
Previous Changes:				
Quantity	-	+5706.3	-	+5706.3
Schedule	-	+200.7	-	+200.7
Engineering	+646.3	+2813.0	-	+3459.3
Estimating	+54.0	-881.6	-	-827.6
Other	+15.5	+24.6	-	+40.1
Support	+101.0	+2739.9	-	+2840.9
Subtotal	+816.8	+10602.9	-	+11419.7
Current Changes:				
Quantity	-	+143.1	-	+143.1
Schedule	-	+15.6	-	+15.6
Engineering	-198.6	+330.6	-	+132.0
Estimating	-52.9	-66.0	-	-118.9
Other	-	-	-	-
Support	-	+239.2	-	+239.2
Subtotal	-251.5	+662.5	-	+411.0
Total Changes	+565.3	+11265.4	-	+11830.7
Current Estimate	1143.9	15063.6	-	16207.5

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Change Schedule.

Engineering: Added capability (Improved radar, Advanced IFF, AMRAAM integration) and development of F-16 A/B Mid-life Update (MLU), F-16 C/D CAS Retrofit Kits, F-16 Core Upgrades, follow-on multirole fighter, probe and drogue aerial refueling capability, and a Close Air Support/Battlefield Air Interdiction (CAS/BAI) retrofit kit.

Estimating: Refinement of estimates.

Other: Congressional action on ICS, CIP, and FOT&E Funding.

13b. Cost Variance Analysis (Cont'd):

Support: Development of AIS.

Procurement

Economic: Revised escalation indices.

Quantity: Addition of 1538 aircraft.

Schedule: Stretchout of FY82-85 and FY91-93 procurement and associated impact of quantity changes.

Engineering: Production incorporation of added capabilities (AMRAAM, LANTIRN, Improved R&R) and associated impact of quantity changes.

Estimating: Flyaway cost re-estimates; three multiyear procurements and associated impact of quantity changes; re-estimate of Block 40 tasks; Costs of restructure of FY90-93 contract to reflect 270 aircraft quantity reduction; Grassroots re-estimate of airframe cost, and adjustment for prior year escalation.

Other: Potential contract award fees.

Support: Increased support for added aircraft and capability enhancements; adjustment for prior year escalation for support elements, increased weapons system training equipment requirements, refinement of other peculiar support cost, re-estimate of initial spares requirements, and transfer of Interim Contractor Support (ICS) costs from O&M to reflect total weapon system support costs.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-35.9
Cancellation of Probe and Drogue Aerial Refueling Development Task. (Engineering)	-5.8	-17.3
Re-estimate of F-16 Core Upgrades (Estimating)	-69.1	-192.5
Revised estimate for Close Air Support Development effort (Estimating)	+4.2	+13.8
Re-estimate of test and mission requirements (Estimating)	+11.5	+33.5
Adjustment for current and prior year escalation (Estimating)	+0.5	+1.8

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Removal of follow-on multirole fighter development funding from F-16 acquisition reporting (Engineering)	-192.8	-562.7
RDT&E Subtotal	-251.5	-759.3
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-26.5
Addition of 24 aircraft in FY94 and FY95 for a total of 48 aircraft. with quantity increase (Quantity)	+143.1	+473.1
Schedule change associated with quantity increase (Schedule)	+15.6	+147.4
Engineering change associated with quantity increase (Engineering)	+218.7	+527.2
Estimating change associated with quantity increase. (Estimating)	-68.5	-126.6
Support change associated with quantity increase (Support)	+8.8	+28.9
Identification of Operational Flight Program (OFP) updates and associated Qualification Testing Support beyond production (Engineering)	+111.9	+383.3
Deletion of FY93 tail-up and USAF production line close out costs due to continued USAF product (Estimating)	-21.2	-67.7
Re-estimate of connection of deficiency kit installation labor to support F-16 Block 40 structures requirements (Estimating)	+34.5	+117.0
Re-estimate of current and prior year Flyaway costs (Estimating)	-13.5	-54.8
correction to align fly-a-way and support cost (Estimating)	+2.7	+10.7
correction to align fly-a-way and support cost (Support)	+1.9	+6.6
Transfer of Initial Common Support Equipment from the Common Support Equipment to the Aircraft Procurement account to reflect total weapon system costs (Support)	+22.2	+75.4

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Re-estimate of post production peculiar support requirements (Support)	+154.8	+538.2
Identification of radar depot support equipment requirement (Congressional reprogramming) (Support)	+11.1	+34.3
Refinement of current and prior year peculiar support costs (Support)	-0.8	-1.2
Re-estimate of initial spares requirements (Support)	+41.2	+143.8
Procurement Subtotal	+662.5	+2209.1

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
9.315	-0.027	-0.158	1.097	4.544	-0.910	0.025	3.575	8.146	17.461

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

AIS MULTIYEAR II:
General Dynamics Corp., Fort Worth, TX
F33657-84-C-0247, FPIF
Award: November 1, 1984
Definitized: September 1, 1987

Initial Contract Price		
Target	Ceiling	Qty
$440.3	$482.4	29

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$939.8	$1028.7	29	$942.4	$943.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-34.1	$-13.3
Cumulative Variances To Date (10/25/92)	$-43.5	$-17.0
Net Change	$-9.4	$-3.7

Explanation of Change:

This is the FPI portion of Contract F33657-84-C-0247 for procurement

15. Contract Information (Cont'd):
of the 29.5 Avionics Intermediate Shop (AIS) (equivalent units) to support the aircraft buys on the FFP contract. The decrease in target price (-$10.2M) and ceiling (-$11.4M) was due to the negotiation/repricing of five (5) OCPS/ECPS. The OCPS/ECPS for changes to the P-13 configuration, Bendix Corporation Special Repair Activity (SRA), and Organizational & Intermediate (O&I) and depot support equipment accounted for a majority of the decrease. The unfavorable cost variance increase of $9.4M was due to greater than anticipated complexity in the structure test WBS element, and increased expenditures by General Dynamics Electronics in the depot support equipment WBS element. An additional contributor was the unsteady transonic wind tunnel tests on the P-16 semi-span wing model. The unfavorable schedule variance increase of $3.7M was due to behind schedule requisitioning of equipment from inventory in the Depot Support Equipment WBS element and delayed issuance of parts at GD/Electronics. Schedule recovery has begun and no schedule impact to the program is anticipated. The decrease in the estimated price at completion ($14.8M contractor/$30.6 program manager) was due to the negotiation/repricing of the above ECPS/OCPS, increases associated with the above cost variance problem areas, and a revision of General Dynamics' overall use of management reserve for the remainder of the contract. The program manager's estimate at completion assumes a continuation of the current level of performance efficiency over the remainder of the contract. This contract is budgeted to program manager's estimate at completion. It is over 90% complete and will not be reported in future SARs.

Quantity is 29.5 equivalent units.

F110 ENGINES:
General Electric Corp., Evendale, OH
F33657-84-C-2011, FFP
Award: February 3, 1984
Definitized: February 3, 1984

Initial Contract Price		
Target	Ceiling	Qty
$485.7	N/A	126

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$2803.5	N/A	851	$2803.5	$2803.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

The quantity in the Dec 91 SAR was erroneously reported as 849 in

15. Contract Information (Cont'd):
lieu of 851. The contract price increase of $28.5 is due to support equipment buys, various ECPs, and an economic price adjustment for inflation.

This report reflects total USAF contract. Initial contract price includes the first option only. Current contract price includes first option plus four additional options. Cost and schedule variance explanations are not required on this firm fixed price contract. This contract is more than 90% complete and will not be reported in future SARs.

F110 IP ENGINES:	Initial Contract Price Target	Ceiling	Qty
General Electric Corp, Evendale, OH F33657-88-C-2189, FFP Award: February 27, 1989 Definitized: February 27, 1989	$96.9	N/A	8

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1059.8	N/A	224	$1059.8	$1059.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

The contract price increase of $249.4M is due to the procurement of 39 additional engines and support equipment, and incorporation of various ECPs.

This report reflects total USAF contract. Initial contract price includes basic contract only. Current contract price includes basic contract plus 4 options. Cost and schedule variance explanations are not required on this firm-fixed-price contract.

BLOCK 50 INTEGRATION:	Initial Contract Price Target	Ceiling	Qty
General Dynamics Corp, Fort Worth, TX F33657-89-C-0009, FPIF Award: December 1, 1988 Definitized: May 30, 1990	$76.4	$80.0	0

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$213.4	$228.2	0	$213.4	$227.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-13.0	$-4.6
Cumulative Variances To Date (10/25/92)	$-17.4	$-2.3
Net Change	$-4.4	$2.3

Explanation of Change:

The definitized date, September 1, 1990, was erroneously reported in previous SARs. The correct date is 30 May 1990. The increase in target price ($9.4M) and ceiling ($10.0M) was due to the authorization/repricing of five (5) CCPs. The CCPs for the development of redirected Upgraded Programmable Display Generator, Close Air Support, F-16 Night Attack program, and a classified task accounted for the change. The unfavorable cost variance increase of $4.4 was primarily due to the following: Incorporation of final 1991 overhead rates and G & A, material overhead, and fringe benefits applicable to all cost elements; engineering/research and engineering areas where greater than anticipated actual costs were associated with support equipment allocation costs and classified tasks; and incorporation of revised 1992 applied overhead rates. The improvement in unfavorable schedule variance of $2.3M was primarily due to Honeywell's (redirected Upgraded Programmable Display Generator) adherence to its recovery plan. The increase in the estimated price at completion ($9.9M Contractor $17.5M Program Manager) was driven by the authorization/repricing of the above CCPs. The program manager's estimate discounts General Dynamics' forecasts of improved efficiency by the engineering functions for the remainder of the contract effort. This contract is budgeted to program manager's estimate at completion.

F-16 FY90 Production:	Initial Contract Price		
	Target	Ceiling	Qty
General Dynamics Corp, Fort Worth, TX F33657-88-C-0037, FPIF Award: June 21, 1989 Definitized: January 17, 1992	$1198.8	$1317.0	150

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1711.4	$1873.9	150	$1781.3	$1756.7

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (10/25/92)	$-88.1	$-21.7
Net Change	$-88.1	$-21.7

Explanation of Change:

The FY90/91 buy which was reported as a single contract in the 31 Dec 91 SAR is reported as the FY90 buy and the FY91 buy. The program office receives separate Cost Performance Reports (CPRs) on each buy. In the previous SAR, the reported initial target and ceiling price did not include approximately $408.4M (at target price) of authorized, unpriced work. This $408.4M accounts for much of the total change (+$512.6M) in the target price and associated ceiling price changes. The remainder of the changes were due to the following (dollars are reported at target price): The repricing of ECP1649R2/C2, "Production Incorporation of Block 50 F-16 C/D Configuration Changes" (+$5.8M); CCP 4724-2, "Multiyear III European Program Office" (+$6.7M); CCP 4724-1R/C3, "Time Oriented Tasks for Major Airframe Programs" (+$61.0M); the authorization of CCP4724-5/C1, "Multiyear III Technical Order Maintenance" (+$14.1M), and other tasks (+$16.6M). The negative cost variance of $88.1M is due to extensive rework of subassemblies that caused the contractor to fall further behind in aircraft assembly and delivery; problems associated with incorporation of electrical component hardware requirements into the Manufacturing Resource Planning (MRP) system; the incorporation of inventory into work-in-process; the correction of previously understated actuals; inefficiencies due to part shortages, rework, and out-of-station tasks; and applicable rate changes. Impacts from these changes are reflected in the cumulative cost performance index (CPI) which is used to calculate the program manager's estimated cost at completion. G & A, overhead, and fringe benefit changes continue to impact the estimated cost. The negative schedule variance of $21.7M is due to the rework and MRP problems that also affect the cost variance; the correction of overstated BCWP; quarterly initiative requirements that were over budgeted, and applicable rate changes. Impact from these changes are reflected in the program manager's estimated cost, as noted above in the explanation of cost variance changes. Through the October CPR, this contract is 86.2% complete.

15. Contract Information (Cont'd):

F-16 FY91 Production:	Initial Contract Price Target	Ceiling	Qty
General Dynamics Corp, Fort Worth, TX F33657-88-C-0037, FPIF Award: June 21, 1989 Definitized: January 17, 1992	$870.0	$956.3	108

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1091.9	$1196.3	108	$1139.7	$1141.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (10/25/92)	$-22.2	$-56.6
Net Change	$-22.2	$-56.6

Explanation of Change:

The FY90/91 buy which was reported as a single contract in the 31 Dec 91 SAR is reported as the FY90 buy and the FY91 buy. The program office receives separate Cost Performance Reports (CPRs) on each buy. In the previous SAR, the reported initial target and ceiling prices did not include approximately $199.6M (at target price) of authorized, unpriced work. This $199.6M accounts for much of the total target price (+$221.9M) and associated ceiling price changes. The remainder of the changes were due to the following: The repricing of CCP 4724-6, "F-16 Organizational and Intermediate (O & I) Sustaining Effort for Multiyear III" (+$2.6M); CCP 4724-8R1,"Multiyear III - European Program Office" (-$3.8M); ECP 1649R2C2, "Production Incorporation of F-16 C/D Configuration Changes" (+$4.6M); CCP4724-1R1/C3, "Time Oriented Tasks for Major Airframe Programs" (+$5.1M); ECP 1854, "Production Incorporation of UPDG" (-$4.4M)'; CCP 4724-2R1, "Firm Price Estimate for European Program Office" (+$3.8M) and other tasks (+$14.4M). The negative cost variance of $22.2M is due to the following problems: Incorporation of electrical component hardware requirements into MRP; behind schedule requisitioning for hardware and equipment; part shortages; delays in processing receiving reports; quality, tooling, and labor problems existing in the factory and associated G&A, overhead, and fringe benefit charges. Impacts from these changes are reflected in the cumulative Cost Performance Index (CPI) which is weighted at 80% in the program manager's estimated cost calculations. The negative schedule variance of $56.6M is primarily due to the same problems affecting the cost variance as stated above. Impacts from these changes are reflected in the Schedule Performance Index (SPI) which is weighted at 20% in the program manager's estimated cost calculation. Through the October CPR, this contract is 45.9%

15. Contract Information (Cont'd):
complete.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 76.0% (19 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 93.2% ($36389.1 / $39061.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY75-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1669.8	112.5	60.2	77.6	1920.1
Procurement	34719.3	796.7	704.9	920.0	37140.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	36389.1	909.2	765.1	997.6	39061.0

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 3600 Research, Development, Test + Eval, AF								
1975				31.2	32.0	32.0	32.0	
1976				187.2	214.7	214.7	214.7	11.0
197T				57.7	69.0	69.0	69.0	5.4
1977				211.9	256.4	256.4	256.4	2.1
1978				121.3	162.3	162.3	162.3	5.9

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1979				65.8	93.6	93.6	93.6	8.4
1980				17.4	27.6	27.6	27.6	9.4
1981				24.6	43.1	43.1	43.1	11.9
1982				30.9	57.9	57.9	57.9	9.2
1983				36.2	70.9	70.9	70.9	4.9
1984				45.7	93.1	93.1	93.1	3.8
1985				43.0	90.6	90.6	90.6	3.4
1986				28.3	61.1	61.1	61.1	2.8
1987				23.1	52.0	52.0	52.0	2.7
1988				9.3	21.7	21.7	20.4	3.0
1989				10.1	24.4	24.4	24.1	4.2
1990				6.6	16.6	16.6	16.6	4.0
1991				9.9	25.7	25.7	18.2	4.3
1992				55.7	147.7	122.7	47.0	2.8
1993				40.3	109.4	2.3	0.8	2.4
1994				40.5	112.5			2.4
1995				21.2	60.2			2.3
1996				13.6	39.6			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1997				4.2	12.6			2.2
1998				4.1	12.6			2.2
1999				4.1	12.8			2.2
Subtot				1143.9	1920.1	1537.7	1451.4	
Appropriation: 3010 Aircraft Procurement, Air Force								
197T								
1977				182.2	257.6	257.6	257.6	6.2
1978	105	61.0	523.6	889.5	1385.9	1385.9	1385.9	6.6
1979	145	30.0	550.3	852.8	1434.4	1434.4	1434.4	8.7
1980	175	50.4	676.7	872.0	1641.9	1641.9	1641.9	9.7
1981	180	43.0	705.9	936.1	1920.0	1920.0	1920.0	11.9
1982	120	52.6	488.6	1021.7	2205.9	2205.9	2205.9	9.6
1983	120	187.1	528.4	896.7	2051.7	2051.7	2051.7	9.0
1984	144	69.3	650.8	975.6	2327.7	2327.7	2327.7	8.0
1985	150	141.2	700.7	1068.9	2632.7	2632.7	2632.7	3.4
1986	180	136.2	745.0	1130.6	2885.2	2885.2	2885.2	2.8
1987	180	100.5	754.3	1094.8	2907.9	2907.9	2858.9	2.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1988	180	48.0	759.4	963.1	2684.2	2684.2	2585.6	3.0
1989	180	121.2	795.1	1107.2	3190.9	3190.9	2974.2	4.2
1990	150	54.5	702.6	1043.1	3095.8	3095.8	2851.1	4.0
1991	108	110.3	564.7	702.2	2172.6	2035.1	579.9	4.3
1992	48	23.8	307.0	390.7	1220.7	830.2	75.6	2.8
1993	24	13.7	166.8	220.3	704.2	99.3		2.4
1994	24	10.3	177.0	243.7	796.7			2.4
1995	24	9.0	177.5	210.9	704.9			2.3
1996		26.7		83.8	286.1			2.3
1997		24.6		59.8	208.6			2.2
1998		18.5		57.9	206.5			2.2
1999		11.7		60.0	218.8			2.2
Subtot	2237	1343.6	9974.4	15063.6	37140.9	33586.4	30668.3	
Grand Total	2237	1343.6	9974.4	16207.5	39061.0	35124.1	32119.7	

Obligations and expenditures reflect program office records as of 31 December 1992.

17. Production Rate Data:

a. Production Baseline Rate

Production rate for FY93-95 is currently 24 aircraft per year. The maximum economic production rate is contingent upon the participation of other customers.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		796.7		N/A	N/A
Procurement Qty		24		N/A	N/A
Proc. Unit Cost	N/A	33.196	N/A	N/A	N/A
FY 1995					
Procurement Cost		704.9		N/A	N/A
Procurement Qty		24		N/A	N/A
Proc. Unit Cost	N/A	29.371	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		920.0		N/A	N/A

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	8/8
Procurement	2022/1981

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operations is a 24 aircraft squadron operating at a 20 year steady state at 366 flying hours per aircraft per year. Personnel costs include personnel pay and support. Operational and support (O&S) consumables costs consist of aviation petroleum, oil and lubricants (POL). Sustaining investment costs include replenishment spares and support/modifications. Other direct costs consist of munitions and missiles. Indirect costs are personnel acquisition training. The F-16C/D estimate is based on a Block 25B baseline. This O&S estimate was approved as part of the F-16 Annual Estimate briefed to the Aeronautical Systems Center (ASC) Deputy

18a. Operating and Support Costs (Cont'd):
Chief of Staff, Financial Management and Comptroller on November 25, 1991.

b. Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F-16 C/D Squadron	Avg Annual Cost Per F-16 A/B Squadron (Antecedent)
Personnel	31.6	31.6
O&S Consumables	8.5	8.3
Organic Depot Maintenanc	9.7	9.7
Sustaining Investment	17.5	17.5
Other Direct Costs	2.3	2.3
Indirect Costs	6.3	6.3
Total	75.9	75.7

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M (AF)	92.5	41.0	37.4	---	170.9
INDUSTRIAL FUND	1.2	0.3	0.7	---	2.2
Total	93.7	41.3	38.1	---	173.1

N-16 F/A-18 C/D

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: F/A-18 C/D

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
F/A-18 C/D Naval Strike Fighter (HORNET)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
F/A-18 PROGRAM OFFICE
TACTICAL AIRCRAFT PROGRAM
WASHINGTON, DC 20361-1265
CAPT CRAIG STEIDLE
Assigned: June 11, 1990
AV 222-7954 COMM (202) 692-7954

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604263N, 0204136N
PROCUREMENT:
APPN 1506 ICN 0144 (Navy)
APPN 1506 ICN 0525 (Navy)
MILCON:
PE 0206496M, 0204611N

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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93-716

5. (U) Related Programs:
AMRAAM, ASPJ, ALR-67, LASER & IR Maverick, NACES (Ejection Seat), ALQ-126B, HARM, HARPOON, SPARROW/SIDEWINDER, SLAM, RECCE(ATARS), AV-8B, F-15, F404 Engine, Oxygen Generating System, AYK-14 (XN-8), ASN-130/139, ARC-182/210, BRU-32, Deployable Flight Incident Recorder (DFIR), Global Positioning System (GPS).

6. (U) Mission and Description:
The F/A-18 A/B/C/D Naval Strike Fighter is a twin engine, mid-wing, multi-mission tactical aircraft. The F/A-18A and C are single seat aircraft. The F/A-18B and D are dual seat. The F/A-18B is used primarily for training, but the F/A-18D replaces the USMC A-6E, OA-4, TA-4, and RF-4 aircraft in Attack, TAC, FAC, and Reconnaissance squadrons. All F/A-18 A/B/C/D's are missionized for traditional fighter and attack roles through selected use of external equipment to accomplish specific missions. Any aircraft can be quickly configured to perform either fighter or attack missions, or both, offering the operational commander more flexibility in employing his tactical aircraft in a changing scenario. The fighter missions are primarily fighter escort and fleet air defense; the attack missions are interdiction and close air support.

In 1994, 51 two-seat USMC F/A-18 B/D's will have the provisions to accept the Advanced Tactical Air Reconnaissance System (ATARS) with the installation of a sensor pallet in place of the gun system. The ATARS suites will be delivered in 1997, with each Marine All Weather Attack squadron (six total) receiving four ATARS suites. In the near future, the airplane's APG-65 radar will be upgraded with improved ECCM capabilities. The Radar Upgrade (RUG), redesignated the APG-73 program will begin deliveries in 1994.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In 1975, the Navy selected a carrier capable variant of the Northrop YF-17 to satisfy its multimission strike fighter requirement. Full scale development contracts were awarded to McDonnell Douglas (MCAIR) (with Northrop as principal subcontractor) for the airframe and to General Electric for the engine. First flight occurred in November 1978. The first fleet readiness squadron (VFA-125) commenced operations two years later and the first two tactical squadrons achieved initial operational capability (IOC) in March 1983.

In February 1985, Carrier Air Wing 14 (CVW-14) on board USS Constellation (CV-64) deployed to the Western Pacific with two F/A-18 squadrons; the carriers Coral Sea (CV-43), Midway (CV-41), Forrestal (CV-59), Saratoga (CV-60), Independence (CV-62), Kitty Hawk (CV-63), Constellation (CV-64), America (CV-66), John F. Kennedy (CV-67), Nimitz (CVN-68), Dwight D. Eisenhower (CVN-69), Vinson (CVN-70), Theodore Roosevelt (CVN-71), Abraham Lincoln (CVN-72), and Washington

7a. (U) Program Highlights (Cont'd):

(CVN-73) have been configured to operate the F/A-18. In 1990, the Coral Sea (CV-43) was deactivated. In 1991, the Midway (CV-41) was deactivated. In 1992, the Forrestal (CV-59) became the training carrier at Naval Air Station, Pensacola, FL.

Canada, Australia, and Spain have contracted for and received a total of 285 F/A-18 A/B/C/D's. Kuwait has contracted for 40 aircraft.

The first major upgrade of the F/A-18, the F/A-18C (single seat) and F/A-18D (dual seat) began delivery in October 1987. This aircraft contains provisions for the Airborne Self-Protection Jammer (ASPJ), the Advanced Medium Range Air-to-Air Missile (AIM-120 AMRAAM) and the Infrared Imaging Maverick Air-to-Ground Missile (AGM-65F). The F/A-18 C/D aircraft delivered in October 1989 and subsequently are configured with an improved night attack capability featuring a Navigation Forward-Looking Infrared (NAVFLIR) pod, a raster head-up display, special cockpit lighting compatible with night vision devices, a digital color moving map and an independent multipurpose color display.

b. (U) Significant Developments Since Last Report --
Starting with October 1992 deliveries, the F/A-18 C/D aircraft came equipped with the F404-GE-402 Enhanced Performance Engine. These Lot XV aircraft also included the XN-8 mission computer and full reconnaissance provisions, but without the advanced tactical air reconnaissance system scheduled for delivery January 1997. At year's end the research and development phase for the AN/APG-73 upgraded radar was 80% complete. The most recent F/A-18 A/B/C/D software upgrade, 91C Operational Flight Program (OFP), began combined developmental testing and operational testing on 7 December 1992. Development of the Laser Target Designator/Ranger (LTD/R) was running smoothly at year's end with incorporation of the targeting FLIR planned to begin in March 1993.

The principal foreign military sales event of the year was Finland's signing of a letter of agreement to procure 64 F/A-18 C/D aircraft. Israel and Malaysia continued to show interest in the F/A-18 C/D, Canada, Australia and Spain continued modification/retrofit programs designed to upgrade some of these aircraft up to the C/D configuration and in some cases to Lot XII capability. At year's end 26 of Kuwait's 40 aircraft buy had been delivered.

Switzerland has selected the F/A-18 C/D for a 34 aircraft purchase contingent on a national referendum to be held 6 June 1993.

Eight hundred thirty-nine F/A-18 C/D's had delivered to the USN/USMC as of 31 December 1992. These include 11 Full Scale Development

7b. (U) Program Highlights (Cont'd):

aircraft plus one replacement.

The F/A-18 C/D continues to establish records in safety and readiness. Operational Squadrons consistently maintain mission capability rates in excess of 80%.

The F/A-18 C/D is now required to report RDT&E Improvements funding that has not previously been reported. This reporting requirement has caused a breach in the RDT&E program.

The F/A-18 C/D is expected to meet all mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There is currently a breach to the RDT&E Acquisition Program Baseline dated 25 Jan 1993. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Release of RFP	OCT 74	OCT 74	OCT 74
Award Adv. Engineer. Contracts			
General Electric (Engine)	MAY 75	MAY 75	MAY 75
McDonnell Douglas (Airframe)	MAY 75	MAY 75	MAY 75
Award Full Scale Dev. Contract General Electric (Engine)	NOV 75	NOV 75	NOV 75
Milestone II (DSARC)	DEC 75	DEC 75	DEC 75
Award Full Scale Dev. Contract McDonnell Douglas (Airframe)	JAN 76	JAN 76	JAN 76
First Flight	JUL 78	NOV 78	NOV 78
OSD Review - DSARC Principals	N/A	APR 80	APR 80
Fighter Missions IOT&E	OCT 80	FEB 81	FEB 81
Milestone III (DSARC) Fighter	N/A	JUN 81	JUN 81
OSD Limited Program Review	N/A	JUN 81	JUN 81
Begin Fighter Board of Inspections Survey Trials	NOV 80	MAR 82	MAR 82
OPEVAL Completion	DEC 81	OCT 82	OCT 82
Milestone III (DSARC) Attack	N/A	DEC 82	DEC 82
End Fighter Board of Inspections Survey Trials	MAY 82	FEB 83	FEB 83
IOC, First F/A-18 Squadron	SEP 82	MAR 83	MAR 83

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Navy Support Date	N/A	OCT 83	OCT 83
DSARC Principals Review	N/A	MAR 85	MAR 85
RADAR UPGRADE (RUG)	N/A		
Milestone II	N/A	JUL 89	JUL 89
Milestone IIIA1	N/A	JUN 91	JUN 91
Milestone IIIA2	N/A	MAR 93	MAY 93(Ch-1)
Milestone III	N/A	JUN 94	MAY 94(Ch-1)
Milestone IIIB1	N/A	N/A	MAY 94
Milestone IIIB2	N/A	N/A	MAR 95

b. (U) Previous Change Explanations --

First Flight: Was rescheduled from Jul 78 to Sep 78 in accordance with contract definitization. First flight date was delayed from Sep 78 to Nov 78 to permit thorough evaluation of the digital fly-by-wire flight control system.

Milestone III (DSARC IIIA): Redesignated program review - DSARC IIIA changed to OSD program review for DSARC principals.

Milestone III (DSARC IIIB): DSARC IIIB redesignated DSARC III (Fighter) and rescheduled for SEP 80 with a limited program review scheduled for Feb 81 upon completion of IOT&E. DSARC III (Attack) was scheduled for Sep 82 upon completion of OPEVAL. Changes were made based upon Program Review (April 80) and OSD Program Guidance (May 80). Decision Memorandum (17 Dec 80) established February 1981 to be the date for a Limited Program Review, which combined with the Nov 80 Program Review, constituted DSARC III (Fighter). The Limited Program Review was held in Mar 81. DSARC III (Fighter) completed as stated in 29 Jun 81 Decision Memorandum. DSARC III (Attack) was set for Fall 82 by Decision Memorandum (29 Jun 81) and completed in Dec 82.

OPEVAL Completion: Concurrent fighter and attack systems OPEVALs rescheduled for the period Sep 81 - Feb 82, to accommodate delays in contractor and DON DT&E. Results contribute to OSD Program Review scheduled for Apr 82. OPEVAL completion slipped until Aug 82, on the flight test schedule. Carrier portions of OPEVAL slipped to Oct due to availability of carrier.

End Board of Inspection and Survey Trials: Combined Fighter and Attack BIS completed in Aug 82. BIS consolidated into the minimum number of flights. Navy Technical Evaluation conducted in Mar/Apr in

9b. (U) Schedule (Cont'd):
lieu of Initial BIS Trials. Final phase of Service Acceptance Test completed 2nd quarter, FY 83, using production aircraft.

IOC, First F/A-18 Squadron: Six month slip due to FY 79 budget decision on procurement schedule. Congressional direction to purchase additional FY 80 aircraft permitted moving Mar 83 IOC date to Sep 82. Change to Dec 82, in accordance with Weapon System Planning document of Jun 80. Aircraft delivery locations were rearranged so that 11 VMFA-314 aircraft in latest configuration would be coming off production line.

Review for DSARC Principals: OSD Program Review, scheduled for Oct 84, occurred in Mar 85, and included data on initial F/A-18 aircraft carrier workups. Operational testing results were presented to OUSDR&E in Mar 85; all requirements were met.

Radar Upgrade (RUG) milestones: As reflected in the FY 1992/93 R&D Descriptive Summary. Dec 90 SAR is the first time these milestones were reported.

Milestone IIIA1 NPDM dated June 1991.

c. (U) Current Change Explanations --

(Ch-1): Additional time was required to incorporate operational support for new weapons (JDAM, JSOW) into the RUG Phase II documentation.

d. (U) References --

(U) Development Estimate:
DCP #141 dated 18 November 1976; OSD Program Review Memorandum, 17 March 1983

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 25 January 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Weight (lbs)					
Empty VF	21649	24395 / 24883	24395	24395	(CH-1)
Empty VA	21720	24395 / 24883	24395	24395	(CH-1)

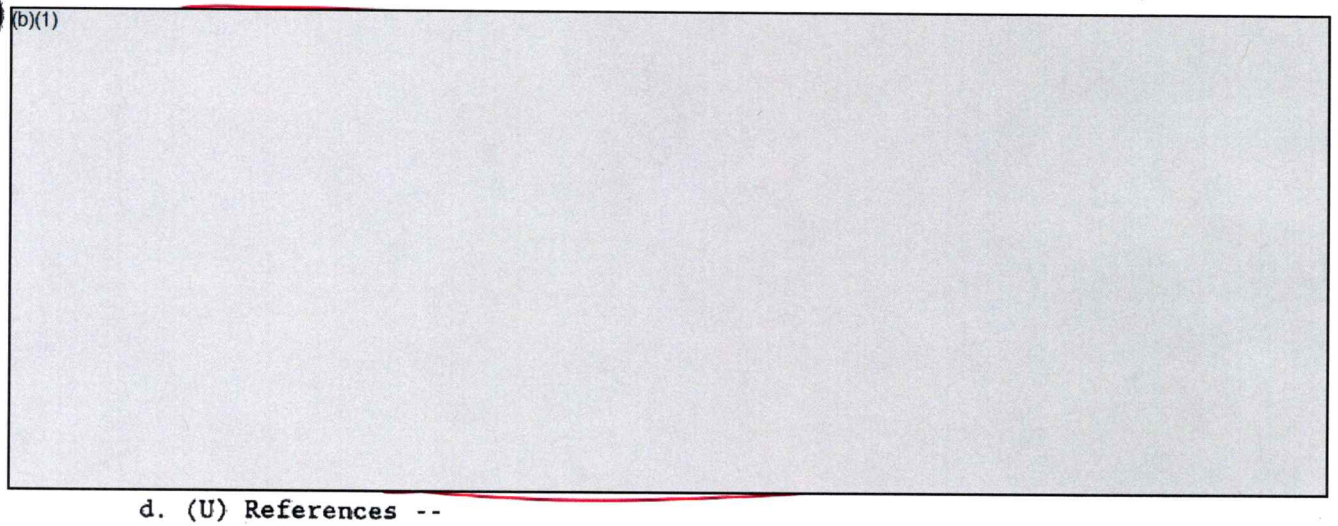
(b)(1) [redacted]

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

(b)(1)

(b)(1)



d. (U) References --

(U) Development Estimate:
DCP #141 dated 18 November 1976; OSD Program Review Memorandum, 17 March 1983

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 25 January 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	1437.7	1652.3	1948.6
Procurement	6560.9	13542.3	12761.2
Airframe	(3599.6)		(6657.6)
Engines	(1059.7)		(1484.5)
Avionics	(198.8)		(336.9)
Arms/Other GFE	(61.3)		(1564.5)
Total Flyaway	(4919.4)		(10043.5)
Total Other Wpn Sys	(517.5)		(980.4)
Peculiar Support	(610.3)		(1094.3)
Initial Spares	(513.7)		(643.0)
Construction (MILCON)	18.0	21.6	23.7
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	8016.6	15216.2	14733.5

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	4858.7	26994.2	24782.9
Development (RDT&E)	(396.7)	(751.3)	(1188.7)
Procurement	(4451.7)	(26223.4)	(23572.7)
Construction (MILCON)	(10.3)	(19.5)	(21.5)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	12875.3	42210.4	39516.4

In FY's 96 and 97 a total of 31 ATARS Sensor Suites will be procured for the F/A-18 C/D aircraft; 16 in FY96 for $34.283M and 15 in FY97 for $34.288M.

b. (U) Quantity --

Development (RDT&E)	11	0	11
Procurement	800	1157	1075
Total	811	1157	1086

Quantities based on FY94 President's Budget Submission.

c. (U) Foreign Military Sales/International Cooperative Programs --

	Aircraft Qty	Program Cost
Spain	72	$2.339B
Australia	75	$2.803B
Kuwait	40	$1.900B
Finland	64	$3.200B

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DCP #141 dated 18 November 1976; OSD Program Review Memorandum, 17 March 1983

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 25 January 1993.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary**:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	39516.4	42394.9	39516.4
(2) Quantity	1086	1168	1086
(3) Unit Cost	36.387	36.297	36.387
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	1341.6	1895.9	1829.2
Less CY Adv Proc	109.4	149.5	252.6
Plus PY Adv Proc	144.7	153.3	109.4
Net Total	1376.9	1899.7	1686.0
(2) Quantity	36	48	36
(3) Unit Cost	38.247	39.577	46.833

The unit cost increase from FY93 to FY94 can be attributed to additional non-recurring costs associated with new configuration items and increased levels of Ancillary Equipment and Support funding.

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1834.4	11012.6	28.3	12875.3
Previous Changes:				
Economic	+188.1	+5555.8	-	+5743.9
Quantity	-	+2471.7	-	+2471.7
Schedule	+14.6	+7756.2	-0.6	+7770.2
Engineering	+255.6	+2970.5	+1.7	+3227.8
Estimating	+288.3	+5738.9	+10.7	+6037.9
Other	+6.5	-	-	+6.5
Support	+3.0	+4260.0	-1.4	+4261.6
Subtotal	+756.1	+28753.1	+10.4	+29519.6
Current Changes:				
Economic	-1.2	-974.3	-	-975.5
Quantity	-	-1179.7	-	-1179.7
Schedule	-	-202.8	-	-202.8
Engineering	+103.6	-187.1	+6.5	-77.0
Estimating	+444.4	-804.7	-	-360.3
Other	-	-	-	-
Support	-	-83.2	-	-83.2
Subtotal	+546.8	-3431.8	+6.5	-2878.5
Total Changes	+1302.9	+25321.3	+16.9	+26641.1
Current Estimate	3137.3	36333.9	45.2	39516.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1437.7	6560.9	18.0	8016.6
Previous Changes:				
Quantity	-	+1768.1	-	+1768.1
Schedule	+9.4	+1075.0	-0.9	+1083.5
Engineering	+110.8	+912.0	+0.7	+1023.5
Estimating	+156.1	+2122.4	+3.8	+2282.3
Other	+4.5	-	-	+4.5
Support	+1.5	+1103.9	-0.5	+1104.9
Subtotal	+282.3	+6981.4	+3.1	+7266.8
Current Changes:				
Quantity	-	-362.6	-	-362.6
Schedule	-	-24.5	-	-24.5
Engineering	+35.8	-71.3	+2.6	-32.9
Estimating	+192.8	-295.0	-	-102.2
Other	-	-	-	-
Support	-	-27.7	-	-27.7
Subtotal	+228.6	-781.1	+2.6	-549.9
Total Changes	+510.9	+6200.3	+5.7	+6716.9
Current Estimate	1948.6	12761.2	23.7	14733.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates.

Schedule: Lower production build-up and extension of the radar test bed aircraft usage.

Engineering: Commonality of fighter and attack aircraft; extended testing requirements. Development and testing for the Radar Upgrade (RUG) program. Transfer of the F/A-18 E/F program to a separate SAR.

Estimating: Revisions for budget changes, flight test costs, equipment price analysis, and reprogramming of unobligated balances. Revised to reflect prior year actuals and the current Radar Upgrade (RUG)

13b. (U) Cost Variance Analysis (Cont'd):

program.

Other: Court ruling on previous year's allowable cost to the government.

Support: Additional operational test time support.

Procurement

Economic: Revised escalation indices.

Quantity: 566 additional aircraft; change in annual procurement. Reduction from 1366 to 1157.

Schedule: Fluctuations in production rates and final production year. Rephase and accelerate program (+57 in FY 87-90). Program stretchout (208 procured in FY 93-95). Increase FY 89 quantity by 12 and decrease FY 95 quantity by 12. Decreased FY 90-94 (from 72 to 66), increased FY 95 (from 52 to 60) and FY 96 (from 0 to 22). Aircraft procurement rephased thru FY01: FY91 from 66 to 48; FY92 from 66 to 36; FY93 from 66 to 20; FY94 from 66 to 20; FY95 from 60 to 20; FY96 from 22 to 12; FY97 from 0 to 30; FY98 thru FY00 from 0 to 48; FY01 from 0 to 16. Aircraft procurement rephased through FY98 instead of FY01.

Engineering: Commonality, additional equipment and correction of defects, changes in procurement of two-seaters, refinements to ECP-178, reduction in two-seaters, changes in configuration (ECP-87 & GPS). Upgrade systems by replacing ASN-130 with ASN-139, ARC-182 with ARC-210, ALE-39 with the ALE-47 and replace KAPTON wire. Add weapons capability (ECP-290), Advanced Tactical Air Reconnaissance System, Deployable Flight Incident Recorder, Enhanced Performance Engine, and Integrated Night Vision System. Configuration of the F/A-18 E/F variant and implementation of RUG and the AN/AYK-14 mission computer upgrade. Incorporation of VECP-381 Laser Spot Tracker. Deletion of LDT/SC.

Estimating: Revised procurement strategy and program estimates based on more current information, reduced profit in outyears, removal of multi-year pricing assumptions, demonstrated contract performance, 5-yr Budget Plan, FY 88 contract settlement, reflect impact of increase to subcontractor overhead rates (above previous should cost estimates). Change in acquisition strategy from multi-year procurement to annual procurement accompanied by a loss of the projected multi-year savings. Changes in rates and overhead due to configuration changes, loss of Switzerland as a FMS

13b. (U) Cost Variance Analysis (Cont'd):

customer, and McDonnell Douglas' decreased business base.

Support: Changes in projected sites, aircraft distribution, increased aircraft quantity, decreased spares, adjusted allocation of support due to change in aircraft procurement schedule. Reduction in support due to some decreased requirements and a challenge to reduce costs. Increase in spares funding due to configuration changes and to maintain readiness objectives. Increase in support due to standup of a newly identified site (Cherry Point), increased support configuration changes and to maintain readiness objectives. Spares and equipment changes for new configuration items and aircraft procurement rephasing.

MILCON

Economic: Revised escalation rates.

Schedule: Facility restructuring to meet changed deliveries.

Engineering: Rinse Unit at MCAS Kaneohe Bay, Hawaii.

Estimating: Redistribution of requirements, updated estimates. Reduced estimate to absorb increases resulting from revised economic escalation. Update of prior years to reflect actuals.

Support: Realignment of facilities; changes in program allocation of MILCON funds.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.1
Addition of RUG Phase II program. (Engineering)	+31.6	+91.8
Addition of second OPEVAL associated with RUG Phase I. (Engineering)	+4.2	+11.8
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+0.6
Revised to reflect prior year actuals. (Estimating)	-0.7	-1.3

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Addition of F/A Improvements line not previously reported (Estimating)	+193.1	+445.1
RDT&E Subtotal	+228.6	+546.8
(2) Procurement		
Adjusted allocation of support due to change in aircraft procurement schedule and decreased quantities. (Support)	-27.7	-83.2
Allocation due to qty decrease, revised procurement strategy and estimates based on more current info, addition of multi-year proc pricing assumptions and addition of FMS customers (Estimating)	-295.0	-804.7
Cancellation of ASPJ program. (Engineering)	-144.0	-453.1
Decrease production quantity by 82 aircraft FYs 93-98. (Quantity)	-362.6	-1179.7
Addition of SMS Upgrade, PID, GPS, and CVRS systems. (Engineering)	+72.7	+266.0
Allocation due to quantity decrease. Fluctuations in production rates and final production year. (Schedule)	-24.5	-202.8
Revised economic escalation indices. (Economic)	N/A	-974.3
Procurement Subtotal	-781.1	-3431.8
(3) MILCON		
Engine Test Cell at Cecil Field and Battery Shop at NAS Lemoore (Engineering)	+2.6	+6.5
MILCON Subtotal	+2.6	+6.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
15.876	4.391	-2.831	6.968	2.901	4.818	0.416	3.848	20.511	36.387

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) RADAR UPGRADE (RUG):	Initial Contract Price		
	Target	Ceiling	Qty
MCDONNEL DOUGLAS, ST LOUIS, MO N00019-89-C-0130, FPI Award: April 30, 1990 Definitized: September 5, 1991	$223.0	$229.0	5

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$223.0	$229.0	5	$200.5	$215.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.3	$-1.1
Cumulative Variances To Date (10/31/92)	$-4.4	$-3.5
Net Change	$-2.1	$-2.4

Explanation of Change:

The October 1992 CPR analysis conducted by the NAVAIR (AIR-52433) cost analyst continues to show cost and schedule improvements. Leading unfavorable cost drivers are the System Software, Radar Receiver and the Radar Data Processor under a firm fixed price subcontract with Hughes. Continued improvement in cost/schedule performance would support a lower AIR-5243 Estimate at Completion (EAC) (currently at $215M).

b.(U) Procurement --

(U) FY88-95 PROD ENGINES:	Initial Contract Price		
	Target	Ceiling	Qty
GENERAL ELECTRIC COMPANY, LYNN, MA N00019-86-C-0247, FFP Award: April 17, 1987 Definitized: September 30, 1991	$226.8	N/A	141

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1681.8	N/A	902	$1681.8	$1681.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY91 PROD AIRFRAMES:
MCDONNELL DOUGLAS, ST LOUIS, MO
N00019-90-C-0010, FFP
Award: January 1, 1990
Definitized: September 30, 1991

Initial Contract Price		
Target	Ceiling	Qty
$1047.8	N/A	48

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1161.2	N/A	48	$1161.2	$1161.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY 92 PROD AIRFRAMES:
MCDONNELL DOUGLAS, ST LOUIS, MO
N00019-90-C-0285, FFP
Award: N/A
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$1304.0	$0.0	48

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1356.3	$0.0	48	$1356.3	$1356.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

(U) FY 93 PROD AIRFRAME:
MCDONNELL DOUGLAS, ST LOUIS, MO
N00019-92-C-0006, FFP
Award: N/A
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$1109.2	$0.0	36

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1109.2	$0.0	36	$1109.2	$1109.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 76.0% (19 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 83.9% ($33169.1 / $39516.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY75-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	2940.3	71.5	42.4	83.1	3137.3
Procurement	30183.6	1829.2	1603.1	2718.0	36333.9
MILCON	45.2	-	-	-	45.2
O&M	-	-	-	-	-
Total	33169.1	1900.7	1645.5	2801.1	39516.4

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1975				19.5	20.0	20.0	20.0	10.9
1976				100.1	110.4	110.4	110.4	6.6
197T				18.9	22.2	22.2	22.2	2.9
1977				271.3	341.9	341.9	341.9	2.6
1978				462.8	626.8	626.8	626.8	6.8
1979				336.3	496.1	496.1	496.1	8.4
1980				192.8	314.8	314.8	314.8	10.6
1981				93.9	168.4	168.4	168.1	10.6
1982				99.7	189.8	189.8	186.3	7.6
1983				51.7	103.4	103.4	102.2	4.9
1984				84.8	175.8	175.8	175.3	3.8
1985				14.4	30.7	30.7	30.4	3.4
1986				25.6	56.3	56.3	55.5	2.8
1987				13.2	29.8	29.8	29.0	2.7
1988				5.9	13.9	13.9	13.4	3.0
1989				4.1	9.9	9.9	9.5	4.2
1990				12.9	32.8	32.8	31.7	4.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1991				29.0	76.3	76.3	74.4	4.3
1992				25.4	68.6	68.6	49.8	2.8
1993				19.0	52.4	46.9	5.2	2.4
1994				25.3	71.5			2.4
1995				14.7	42.4			2.3
1996				10.3	30.5			2.3
1997				7.6	23.1			2.2
1998				5.1	15.9			2.2
1999				4.3	13.6			2.2
Subtot	11			1948.6	3137.3	2934.8	2863.0	

Does not include $8.0M in FY91 and $39.9M in FY92 for Pre-Development efforts that are reported under the F/A-18 E/F SAR.

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy								
1978				21.9	34.1			6.8
1979	9		233.1	346.8	598.6	598.6	598.6	8.7
1980	25		442.1	602.3	1181.3	1181.3	1181.3	11.8
1981	60		670.5	932.6	2028.5	2028.5	2028.5	11.6

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
1982	63	36.4	613.0	1027.7	2431.1	2431.1	2431.1	14.3
1983	84	97.5	702.5	1015.8	2556.0	2556.0	2556.0	9.0
1984	84	45.9	639.1	902.3	2361.8	2361.8	2361.8	8.0
1985	84	148.1	571.8	883.5	2379.5	2379.5	2379.5	3.4
1986	84	90.4	552.2	767.6	2130.4	2130.4	2130.4	2.8
1987	84	117.9	546.8	795.0	2283.9	2283.9	2283.9	2.7
1988	84	124.4	545.9	813.8	2439.5	2439.5	2439.5	3.0
1989	84	115.1	548.5	798.7	2489.9	2489.9	2489.5	4.2
1990	66	98.0	421.3	618.3	1994.0	1983.9	1861.8	4.0
1991	48	95.3	337.6	545.0	1808.0	1681.3	1334.3	4.3
1992	48	136.9	380.6	625.5	2125.4	1857.3	360.1	2.8
1993	36	48.1	317.4	385.8	1341.6	428.6	17.0	2.4
1994	36	92.1	281.7	514.3	1829.2	2.5		2.4
1995	36	81.1	274.0	440.7	1603.1			2.3
1996	36	77.0	282.2	401.9	1494.7			2.3
1997	24	76.1	191.0	309.8	1177.1			2.2
1998		11.9		11.9	46.2			2.2
Subtot	1075	1492.2	8551.3	12761.2	36333.9	28834.1	26453.3	

16c. (U) Program Funding Summary (Cont'd):
The F/A-18 C/D program uses adjusted Base Year (FY75$) to Then Year dollar indices to account for differences between OSD and MCAIR escalation during the 78-82 time frame. These Base Year to Then Year dollar rates cannot be converted to FY to FY rates without first using adjusted outlay rates which were never specifically addressed.

Appropriation: 1205 Military Construction, Navy

1977				0.8	1.0	1.0	1.0	2.8
1978								7.7
1979								9.3
1980				4.3	6.9	6.9	6.9	10.6
1981				0.2	0.4	0.4	0.4	10.6
1982				5.8	10.3	10.3	10.3	7.6
1983				2.7	5.0	5.0	5.0	4.9
1984				3.9	7.4	7.4	7.4	3.8
1985				0.6	1.1	1.1	1.1	3.4
1986				0.4	0.9	0.9	0.9	2.8
1987								2.7
1988								3.0
1989								4.2
1990				1.7	4.0	4.0		4.0
1991				0.7	1.7	1.7		4.3
1992								2.8
1993				2.6	6.5			2.4
Subtot				23.7	45.2	38.7	33.0	
Grand Total	1086	1492.2	8551.3	14733.5	39516.4	31807.6	29349.3	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Steady-state full rate production of 200 aircraft per year was approved at Milestone III and reported in the December 1982 Selected Acquisition Report (SAR).

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	1829.2	1829.2	4001.0	0.0	+2171.8
Procurement Qty	36	36	114	0	+78
Proc. Unit Cost	50.811	50.811	35.096	0.000	-15.715
FY 1995					
Procurement Cost	1603.1	1603.1	1202.0	0.0	-401.1
Procurement Qty	36	36	18	0	-18
Proc. Unit Cost	44.531	44.531	66.778	0.000	+22.247
Balance of Proc. (FY 1996 to Complete)	6150.3	2718.0	0.0	+3432.3	-2718.0

1) - F/A-18 C/D maximum rate equals 145. APG-73 Radar maximum rate equals 72.
- Assumes FMS quantities of 31 in FY94 and 28 in FY95.
- Buy out of FY94-97 equals 132.
- Outyears ILS hardware, Support Equipment, Spares, Ancillary, and Non-recurring were moved to FY's 94 and 95.

2) - The maximum economic quantity in FY 95 reflects the buyout of the remaining program.

3) - USN buy of 36 aircraft per year reflects the minimum sustaining rate for the program.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	11/11
Procurement	835/835

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Current Program: F/A-18C
Flight hours per aircraft per month: 36
Number of aircraft per squadron: 12
Consumption rate, gallons per hour: 1073.9 POL cost, JP-5, per barrel, FY91: 44.52

Antecedent Program: F/A-18A
Flight hours per aircraft per month: 32
Number of aircraft per squadron: 10
Consumption rate, gallons per hour: 1117
POL cost, JP-5, per barrel, FY91: 44.52

Date of estimate: December 1991

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F/A-18C Squadron	Avg Annual Cost Per F/A-18A Squadron
Personnel	8.9	9.2
Consumables	10.3	7.8
Depot Maintenance	6.0	4.5
Sustaining Investment	2.3	1.7
Indirect cost	0.5	0.4
Total	28.0	23.6

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	73.0	5.4	---	---	78.4
Industrial Fund	4.3	2.2	---	---	6.5
Total	77.3	7.6	---	---	84.9

92-036

A-8 BRADLEY FVS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: BRADLEY FVS (M2/M3)

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 26 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name): M2/M2A1,M2A2,Infantry Fighting Veh; M3/M3A1/M3A2,Cavalry Fighting Veh (BFVS)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
U.S. Army Tank-Automotive Command — COL Dennis C. Deming
PM, Bradley Fighting Vehicle Systems — Assigned: December 26, 1991
ATTN: SFAE-ASM-BV — AV 786-5630 COMM (313) 574-5630
Warren, MI 48397-5000

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 23625 Project DH65
PE 23735 Project D332
PE 64616 Project D258, D460
PE 64617 Project D340



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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 2033 ICN G15100 (Army)
APPN 2033 ICN G20900 (Army)
APPN 2033 ICN G21100 (Army)
APPN 2033 ICN G80702 (Army)
APPN 2033 ICN GA0153 (Army)
APPN 2033 ICN GA7000 (Army)
APPN 2033 ICN G80716 (Army) (Shared)
MILCON:
PE 22393, 84731, 85796

5. (U) Related Programs:
M790 Family of 25mm Ammunition; BFVS Improvement Program; Multiple Launch Rocket System (MLRS); TOW-2 Subsystem; Armored Systems Modernization.

6. (U) Mission and Description:
The Bradley Fighting Vehicle Systems (BFVS) family consists of the M2/M2A1/M2A2 Infantry Fighting Vehicle (IFV) and the M3/M3A1/M3A2 Cavalry Fighting Vehicle (CFV). The IFV and CFV are fully tracked, lightly armored fighting vehicles which provide protected cross-country mobility and vehicular-mounted firepower to infantry/cavalry units. The IFV/CFV have swimming capability, are air transportable, and in the combined arms task force the IFV/CFV meet requirements for a companion vehicle to the Abrams Tank. Vehicle armament consists of a fully stabilized, dual-feed, externally powered M242 25mm automatic gun, a TOW missile system, and a coaxially-mounted 7.62mm machinegun. Supplementary armament for the IFV is the M231 firing port weapon. The product-improved IFV/CFV versions incorporate improvements in missile performance, operations in a Nuclear Biological Chemical environment, fightability, survivability, and in other functions. The M2A2/M3A2 vehicles retain much of the same cross country mobility and major performance characteristics as the basic and A1 vehicles. They also incorporate improved armor protection, spall protection liners, and minor mods such as restowages. The IFV/CFV introduces a formidable fighting force into the Army that causes a concomitant re-distribution of some M113 Armored Personnel Carriers.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The BFVS is an outgrowth of the plan to develop and test the predecessor Mechanized Infantry Combat Vehicle (MICV). The MICV entered engineering development in September 1972. Special studies requested by Congress and OSD were conducted which resulted in termination of the MICV/20mm but which supported the requirement for an IFV/CFV 25mm/TOW program. Secretary of Defense Decision

7a. (U) Program Highlights (Cont'd):

Memorandum (SDDM) dated February 1, 1980, approved full production of the M2/M3, with basic TOW. The initial production contract was awarded to FMC Corporation in February 1980. In October 1980, OSD approved the start of a TOW 2 development program. The Government accepted the first production IFV on May 8, 1981. IFV/CFV fielding to FORSCOM units began in March 1983. A comprehensive Block I modification program (A1) was initiated in July 1983. The Army approved M2A1/M3A1 vehicle production in May 1985. The A1 performance and reliability was significantly improved by the addition of the TOW 2 Subsystem. A Block 2 development program was initiated in October 1985 to provide increased survivability changes and improvements into production vehicles. On September 10, 1987, DA approved incorporating survivablity improvements into the BFVS acquisition program. The first A2 production vehicle was delivered in May 1988, and the first A2 vehicle with 30mm high survivability (HS) protection was delivered in September 1988. In November 1988, DA approved a development program to increase engine horsepower (HP) from 500 to 600. The first production A2 vehicles with 600HP powertrain were delivered in May 1989 and began fielding in January 1990. An initial FMS sale of 200 M2A2 IFV's to the Kingdom of Saudi Arabia was signed in December 1988. Portions of the Bradley production line at FMC were shut down and vehicle shipping activities were curtailed as a result of the October 17, 1989 earthquake and numerous aftershocks. At 1989 year end, FMC was 52 IFVs/CFVs behind the contract delivery schedule, but recovery operation were begun which enabled FMC to resume production on November 27, 1989. In April 1990, HQDA directed that fielding of the M3A2 would no longer be required. Therefore, the last USA M3A2 was produced in August 1990. Also, based on projected force reductions, the total remaining Bradley requirement was reduced from 3000 vehicles to 2442 vehicles, and again to 1200 vehicles. In April 1990, the AAE approved an acquisition strategy of procuring the last 1200 Bradleys with FY90/91 funds with deliveries over 42 months forcing a complete restructuring of the FY90/91 acquisition. The TOW2 Subsystem (FY90/91) contract was competitively awarded to Hughes Aircraft Corp (HAC) in December 1990, and represented total known BFVS Army requirements and the first FMS buy. BFVS supported Operation Desert Storm (ODS) with new production vehicles being shipped to Southwest Asia (SWA) and at Mainz Army Depot (MZAD) where assets were upgraded with all the latest modifications. In December 1990, a follow-on buy was signed with the Kingdom of Saudi Arabia for an additional purchase of 200 M2A2 IFVs. A total of 570 vehicles were shipped from FMC to SWA in support of Operation Desert Shield/Storm. Assessments of battlefield damage to the BFVS in SWA indicated minimal damage. The Bradley had excellent operational readiness rates with no unexpected problems or maintentance conditions in the desert environment. The 25mm gun exceeded our expectations.

7a. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
The BFVS has exceeded 90% of vehicle deliveries and expended over 90% of total program. This will be the final BFVS SAR.

The vehicle hatch upgrade application was begun in June 1992 with production breakpoint of the new gunner's hatch. The addition of turret ring armor was cut into production in November 1992. The remaining hatch upgrades are planned for production breakpoint in March 1993. The Transmission Electronic Controller (TEC) was cut into M2A2 production in September 1992. The development of Operation Desert Storm (ODS) improvements was initiated in February 1993 with kit procurement scheduled for FY95. This effort will incorporate the laser range finder, driver's thermal viewer, a combat identification system, re-stowage, a positional navigation system and the missile countermeasure device. FY93 funds were also appropriated for the Bradley Base Sustainment Program. Army was directed to allocate funds between new production and A0 to A2 upgrades. Intensive Army planning and coordination with OSD has resulted in a FY93 funded new production quantity of 54 to replace BFVS losses. The remaining FY93 funds are allocated for upgrade of basic A0 Bradley's to the A2 configuration. Planning and funding subsequent to FY93 is focused entirely on vehicle upgrade rather than new production.

The BFVS satisfies mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are no breaches to the approved Acquisition Program Baseline (APB), dated September 10, 1992, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone III (DA IPR - High Survivability) Program Initiated	N/A	SEP 87	SEP 87
HS Production Contract Modification Award	N/A	OCT 87	OCT 87
2nd A2 Vehicle Production Contract Award (FY88 Buy)	N/A	JUN 88	JUN 88

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
First A2 Vehicle Production Delivery w/30 mm HS Protection)	N/A	SEP 88	SEP 88
Initial Production Test 500 HP Engine			
Start	N/A	JUN 88	JUN 88
Complete	N/A	JUN 89	JUN 89
Initial Production Test 600 HP Engine			
Start	N/A	JUN 89	JUN 89
Complete	N/A	JUN 90	JUN 90
Instructor & Key Personnel Training Completed	N/A	SEP 88	SEP 88
600 HP Engine IPR Decision	N/A	NOV 88	NOV 88
First Comparison Prod Testing w/500 HP Engine			
Start	N/A	MAR 89	MAR 89
Complete	N/A	JUL 89	JUL 89
2nd A2 Vehicle Production Delivery w/600HP Engine (FY88 Buy)	N/A	MAY 89	MAY 89
3rd A2 Vehicle Production Contract Award (FY 89 Buy)	N/A	JUN 89	JUL 89
Initial Operational Capability (IOC)	N/A	AUG 89	AUG 89
Vehicle Retrofit - A1 to A2:			
OCONUS			
Start	N/A	JUN 90	JUN 90
Complete	N/A	SEP 92	MAR 93(Ch-1)
CONUS			
Start	N/A	APR 92	APR 92
Complete	N/A	APR 98	APR 98
Vehicle Hatch Upgrade Production Breakpoint	N/A	DEC 92	MAR 93(Ch-2)
3rd A2 Vehicle Production Delivery (FY 89 Buy)	N/A	MAY 90	JUN 90(Ch-3)
4th A2 Vehicle Production Contract (MYP FY 90-94) Award	N/A	FEB 91	MAY 91
4th A2 Vehicle 1st Prod Delivery for MYP Contract	N/A	MAY 91	JUN 91
First Unit Equipped - A2 Vehicle			
Europe	N/A	APR 89	APR 89
CONUS	N/A	NOV 93	DEC 90
MICV			
QMR Approved, MICV 20mm	OCT 68	N/A	OCT 68

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Concept Formulation Complete	APR 72	N/A	APR 72
Milestone II (DSARC)	MAR 79	N/A	APR 75
Engineering Dev Contract Award	NOV 72	N/A	NOV 76
Terminate MICV 20 mm Program M2/M3	MAR 77	N/A	MAR 77
Milestone III (DSARC)	JAN 80	N/A	JAN 80
Low Rate Initial Production Contract Awarded	FEB 80	N/A	FEB 80
First Production Delivery	MAY 81	N/A	MAY 81
Complete Initial Production Test	APR 83	N/A	MAY 83
Initial Operating Capability M2A1/M3A1	DEC 83	N/A	DEC 83
IPR Approval of M2A1/M3A1 Production	MAY 85	N/A	MAY 85
First A1 Production Contract Award	JUL 85	N/A	JUL 85
First Production Delivery M2A1/M3A1	MAY 86	N/A	MAY 86
Complete Initial Production Test	JUL 87	N/A	SEP 87
Initial Operating Capability	NOV 88	N/A	NOV 88

b. (U) Previous Change Explanations --

Engineering development, PQT-G, Operational Test II, initial production contract award, type classification standard, and first production delivery all were delayed due to DA's decision to terminate the MICV program and begin the IFV/CFV program development. Development estimate for the IOC was based on the MICV program. Actual IOC occurred later due to Army's redefinition of IOC. The Commander FORSCOM determined that the IOC for the M2/M3 occurred in Dec 83. Subsequent to these changes, the Milestone Schedule for the Bradley Program was restructured in Dec 87 to show the most significant milestones for the MICV, M2/M3, M2A1/M3A1, and M2A2/M3A2. The Milestone Schedule for the A2 Program was revised in Dec 88 to reflect the DAE Program Baseline, approved 26 Feb 88. IPT (600 HP) completion date was changed from Apr 89 to Jun 89 to coincide with test priorities. First A2 Vehicle Production Delivery with 30mm HS protection was changed from Jul 88 to Sep 88 due to nonavailability of complete sets of A2 armor. IPT Start 600 HP Engine changed from Sep 89 to Jun 89 to reflect the of test schedule. 4th A2 Vehicle Production Contract Award FY90-94 Buy changed from Jun 90 to Aug 90, because of change in vehicle procurement quantity. Start of OCONUS vehicle retrofit changed from Sep 90 to Jun 90 due to early availability of revised Technical Data Package. Start of CONUS vehicle retrofit changed from Jan 92 to Oct 92 due to the DA withdrawal of $45.1M from the FY90 BFVS modification line. FUE CONUS

9b. (U) Schedule (Cont'd):
changed from Feb 94 to Sep 92 based upon a revised BFVS Fielding Plan. 4th A2 Vehicle Production Contract Award FY90-94 Buy was changed from Aug 90 to Feb 91 due to revised vehicle quantity requirements which delayed the procurement. 4th A2 Vehicle 1st Production Delivery for MY Contract was changed from May 91 to Jun 91 due to an extension of FY89 production caused by the Oct 89 earthquake in California. Vehicle Retrofit A1 to A2 Complete OCONUS changed from Feb 94 to Sep 92 due to the forecasted closure of Mainz Army Depot (MZAD) and other program reductions. Vehicle Retrofit A1 to A2 Start CONUS changed from Oct 92 to Apr 92 due to the forecasted closure of MZAD and the corresponding transfer of workload earlier than forecasted. Vehicle Retrofit A1 to A2 Complete CONUS changed from Jan 96 to Apr 98 due to the forecasted closure of MZAD and other program reductions including the reduction of $75M to the FY92 BFVS modification line. 4th A2 Vehicle Production Contract (MYP FY90-94) Award changed from Feb 91 to May 91 which represented actual contract award. First Unit Equipped (FUE) CONUS changed from Sep 92 to Dec 90 when units received A2 vehicles in SWA. These units returned to CONUS with A2 vehicles.

c. (U) Current Change Explanations --

Ch 1 - Vehicle Retrofit A1 to A2 OCONUS Complete changed from Sep 92 to Mar 93 due to delays in final closure of Mainz Army Depot.

Ch 2 - Vehicle Hatch Upgrade Production Breakpoint changed from Dec 92 to Mar 93 to reflect actual breakpoint.

Ch 3 - 3rd A2 Vehicle Production Contract (MYP FY90-94) delivery changed from Jul 89 to Jun 90 to reflect actual award.

d. (U) References --

(U) Development Estimate:
Development Concept Paper (DCP) No. 30, April 1972, with Cover Sheet Revision, September 1972. Decision Coordination Paper for M2E1/M3E1, November 30, 1984; Decision Coordination Paper for M2A1E1/M3A1E1 High Survivability BFVS, October 5, 1987; HQDA Message, DAMA-ZA/DAMO-FDZ, 1614452 July 1984, Subject: High Survivability Program.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 10 September 1992.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
M2A2/M3A2					
Length (inches)	N/A	258 / 258	257.6	258	
Height (inches)	N/A	119 / 119	116.6	119	
Weight (Combat Loaded) (lbs)		65600 / 67000	66120	67000	(CH-1)

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mobility:					
Range (miles):					
w/500 HP Engine	N/A	260	/ 240	314	240
w/600 HP Engine	N/A	260	/ 250	329.6	260-275
Maximum Speed (mph):					
Land:					
w/500 HP Engine	N/A	40	/ 36	39.4	36
w/600 HP Engine	N/A	40	/ 38	40.8	38-40
Water:					
w/500 HP Engine	N/A	4.0	/ 4.0	4.6	4.0
w/600 HP Engine	N/A	4.0	/ 4.0	5.6	4.0
Acceleration 0-30 mph (sec)					
w/500 HP Engine	N/A	18	/ 30	21.6	30
w/600 HP Engine	N/A	18	/ 22	18	17-22

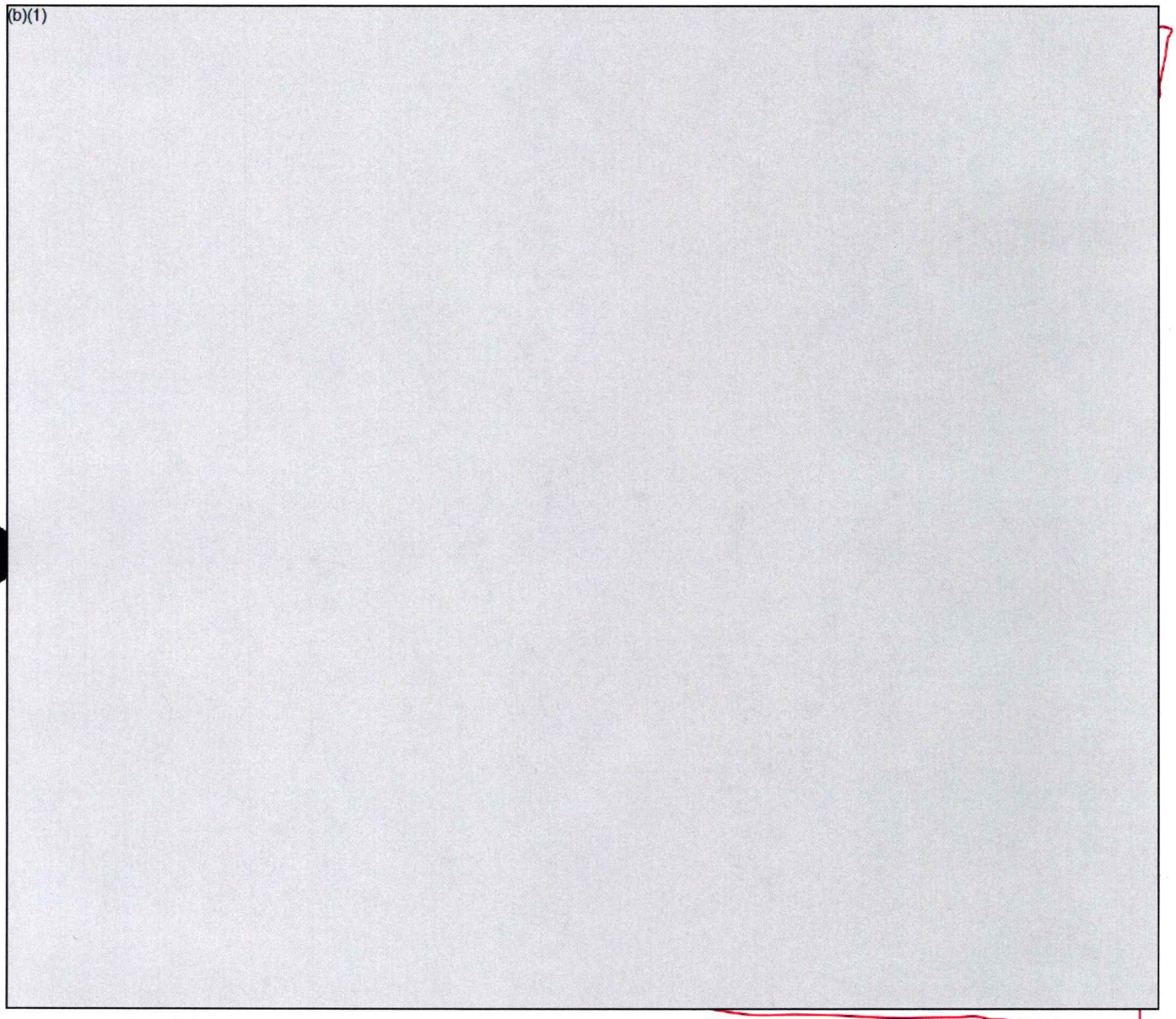
(b)(1)

[redacted]

(b)(1)

10a. (U) Performance Characteristics (Cont'd):

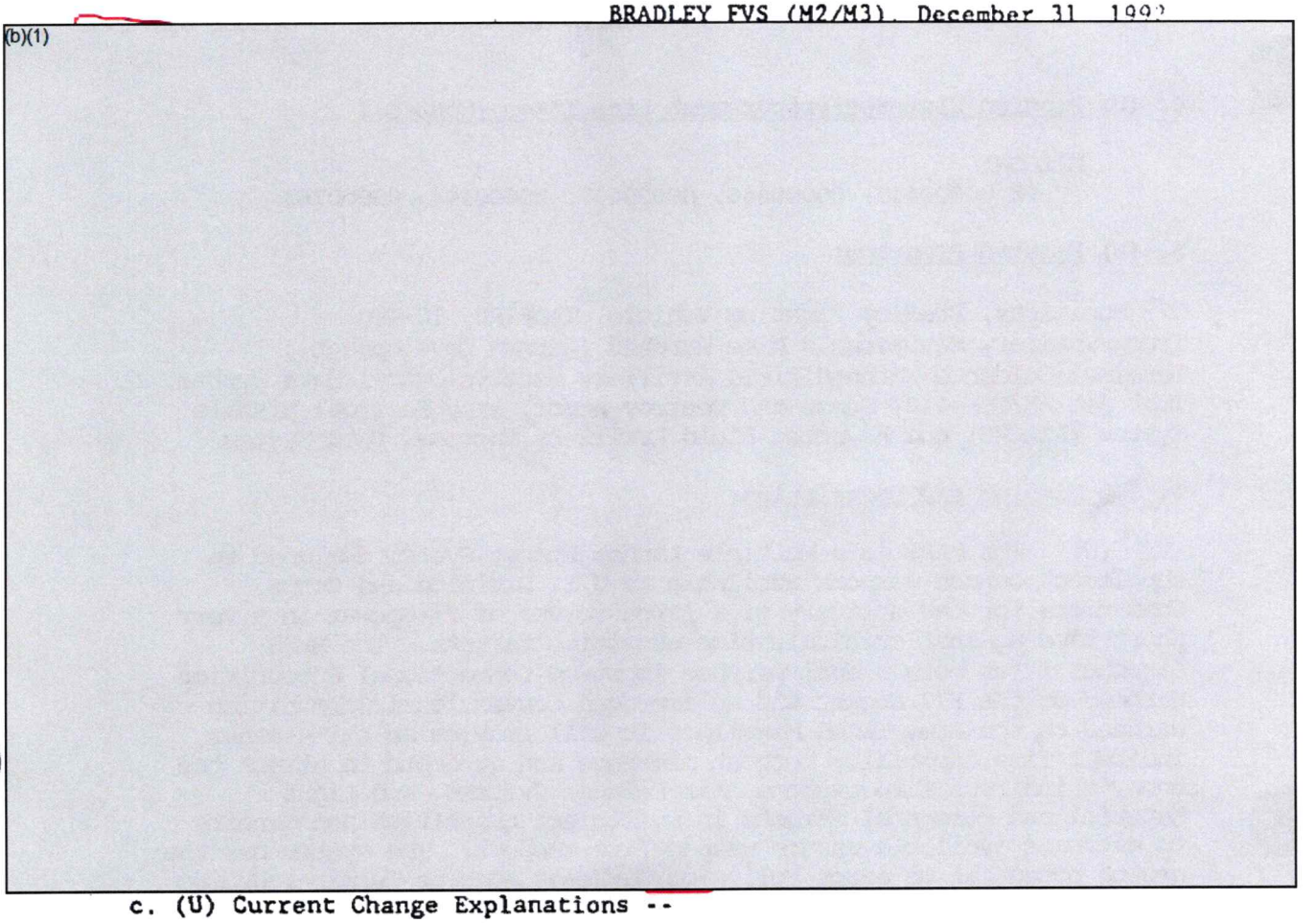
(b)(1)



b. (U) Previous Change Explanations --

MICV/M2/M3: Vehicular data in column 1, Development Estimate, reflects the 20mm MICV which was terminated prior to production. Armament data for DE shows the 25mm VRFWS-program, whereas the armament data for Approved Program is based upon the QMR for 25mm weapon system. Operational Characteristics for the Bradley changed in both demonstrated performance and current estimate as follows: Based upon the M2/M3 Materiel Need and system specification

(b)(1)



c. (U) Current Change Explanations --

(Ch-1) Weight (Combat Loaded) lbs current estimate changed from 69,600 to 67,000. A2 vehicles currently being produced and fielded weigh 62,377 pounds, which is substantially below the threshold. However, it is estimated that this weight could grow to 63,459 pounds with expected vehicle modifications and changes to meet overall ballistic requirements. The changes are needed to provide required 30mm protection per the September 1987 BFVS ASARC Decision Memorandum.

d. (U) References --

(U) Development Estimate:
Development Concept Paper (DCP) No. 30, April 1972, with Cover Sheet Revision, September 1972. Decision Coordination Paper for M2E1/M3E1, November 30, 1984; Decision Coordination Paper for M2A1E1/M3A1E1 High Survivability BFVS, October 5, 1987; HQDA Message, DAMA-ZA/DAMO-FDZ, 1614452 July 1984, Subject: High Survivability Program.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 10 September 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	98.3	374.4	374.8
Procurement	227.3	2904.1	2944.2
Vehicle Rollaway	(139.5)		(2408.1)
FPW	(0.0)		(8.9)
25mm Weapon	(54.2)		(106.0)
Total Rollaway	(193.7)		(2523.0)
FPW Non-Rollaway			(0.1)
Training Devices			(69.1)
Other Support			(56.6)
Total Other Wpn Sys	(0.0)		(125.8)
Peculiar Support	(31.1)		(142.9)
Initial Spares	(2.5)		(152.5)
Construction (MILCON)	0.0	11.1	11.1
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 72 Base-Year $	325.6	3289.6	3330.1
Escalation	111.3	6729.9	6838.1
Development (RDT&E)	(23.8)	(310.5)	(310.5)
Procurement	(87.5)	(6401.2)	(6509.4)
Construction (MILCON)	(0.0)	(18.2)	(18.2)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	436.9	10019.5	10168.2
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	1190	6724	6778
Total	1190	6724	6778

There are 21 RDT&E prototypes which are not considered to be fully configured end items.

c. (U) Foreign Military Sales/International Cooperative Programs --

Our first FMS case has been implemented with Saudi Arabia for a quantity of 200 M2A2 vehicles. The total estimated price is $550.0M. A second Saudi FMS case for 200 additional M2A2 vehicles, for $800.0M was signed in December 90.

d. (U) Nuclear Costs -- None.

11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Development Estimate:
Development Concept Paper (DCP) No. 30, April 1972, with Cover Sheet Revision, September 1972. Decision Coordination Paper for M2E1/M3E1, November 30, 1984; Decision Coordination Paper for M2A1E1/M3A1E1 High Survivability BFVS, October 5, 1987; HQDA Message, DAMA-ZA/DAMO-FDZ, 1614452 July 1984, Subject: High Survivability Program.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 10 September 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	10168.2	10016.2	10168.2
(2) Quantity	6778	6724	6778
(3) Unit Cost	1.500	1.490	1.500
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	192.5	192.5	79.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	192.5	192.5	79.7
(2) Quantity	54	54	0
(3) Unit Cost	3.565	3.565	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	122.1	314.8	0.0	436.9
Previous Changes:				
Economic	-0.2	-209.1	-0.7	-210.0
Quantity	+18.0	+2652.8	-	+2670.8
Schedule	+22.1	+739.9	-	+762.0
Engineering	+382.9	+1467.3	+29.9	+1880.1
Estimating	-13.7	+3089.1	+0.1	+3075.5
Other	+17.9	-	-	+17.9
Support	+135.6	+1247.4	-	+1383.0
Subtotal	+562.6	+8987.4	+29.3	+9579.3
Current Changes:				
Economic	+0.3	-7.5	+0.2	-7.0
Quantity	-	+72.5	-	+72.5
Schedule	-	+7.6	-	+7.6
Engineering	-	+15.0	-	+15.0
Estimating	+0.3	-30.7	-0.2	-30.6
Other	-	-	-	-
Support	-	+94.5	-	+94.5
Subtotal	+0.6	+151.4	-	+152.0
Total Changes	+563.2	+9138.8	+29.3	+9731.3
Current Estimate	685.3	9453.6	29.3	10168.2

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1972 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	98.3	227.3	0.0	325.6
Previous Changes:				
Quantity	+11.1	+873.4	-	+884.5
Schedule	+13.8	+79.1	-	+92.9
Engineering	+162.9	+470.9	+9.0	+642.8
Estimating	+12.2	+889.4	+2.1	+903.7
Other	+11.0	-	-	+11.0
Support	+65.1	+369.0	-	+434.1
Subtotal	+276.1	+2681.8	+11.1	+2969.0
Current Changes:				
Quantity	-	+17.8	-	+17.8
Schedule	-	+0.7	-	+0.7
Engineering	-	+4.4	-	+4.4
Estimating	+0.4	-6.4	-	-6.0
Other	-	-	-	-
Support	-	+18.6	-	+18.6
Subtotal	+0.4	+35.1	-	+35.5
Total Changes	+276.5	+2716.9	+11.1	+3004.5
Current Estimate	374.8	2944.2	11.1	3330.1

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices

Quantity: Revised escalation indices

Schedule: Delays due to redirection of program from one-man weapon station with 20mm Gun/25mm Gun and TOW system.

Engineering: Design effort associated with redirection of program to IFV/CFV configuration; additional design effort of A1 configuration; incorporation of vehicle/modification costs (project D332) into the SAR reporting.

Estimating: Revised estimate for government and contractor engineering; prior year program adjustments; AMC

13b. (U) Cost Variance Analysis (Cont'd):

decisions to withdraw funds; OSD inflation cut; congressional action; and elimination of RDT&E program from FY 92 and outyears;current & prior year inflation offset

Other: Engineering contractor cost growth.

Support: Revised requirements for TMDE and "New Look" manuals.

Procurement

Economic: Revised escalation indices; economic adjustment for negative program change

Quantity: Additions to vehicle quantities to a total of 8,811 and associated increase in gun quantity; subsequent decrease in vehicle quantities to a new total of 6724

Schedule: Production delay due to extension of R&D effort and stretch-out of production to permit delivery of additional vehicles; reschedule of production during FY88 thru FY95; schedule changes applicable to increase in vehicle quantity.

Engineering: Design changed to IFV/CFV, A1 and A2 configurations; Addition of high survivability requirements; Engineering improvements to optics, fire extinguisher, and track; incorporation of Enhanced Position Locating Reporting System (EPLRS), electronic vs. mechanical transmission controller, Digital Turret Distribution Box (DTDB), and P-900 armor; subsequent elimination of EPLRS electronic transmission controller and DTDB; elimination of armor tiles; elimination of P-900 armor

Estimating: Revised production cost estimates based on more current data; application of revised historical escalation indices; revision of acquisition plan to include competition and multiyear procurement; estimating changes applicable to increase in vehicle quantity; delay in armor tile procurement from FY87 to FY91; re-allocation from rollaway to TMDE and Fielding; decrease in quantity of 25mm guns from 611 to 130

Support: Changes in initial spares, peculiar support equipment, TMDE requirements, classroom spares; incorporation of BFVS training devices in SAR reporting structure; increases in spares, training devices and TMDE requirements to support increased quantities.

13b. (U) Cost Variance Analysis (Cont'd):

MILCON
Economic: Revised escalation indices.
Engineering: Storage facilities for A2 tiles.
Estimating: MILCON changes to cover BFVS unique sites.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic indices. (Economic)	N/A	+0.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.3
Increased development requirements. (Estimating)	+0.6	+0.6
RDT&E Subtotal	+0.4	+0.6
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-8.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.3
Total Variance associated with increase of 54 units.	+31.1	+126.7
Quantity Variance resulting from change in procurement of 54 vehicles. (Quantity)	+17.8	+72.5
Schedule Variance resulting from Quantity Allocation. (Schedule)	+0.7	+7.6
Engineering Variance resulting from Quantity Allocation. (Engineering)	+4.4	+15.0
Estimating Variance resulting from Quantity Allocation. (Estimating)	+8.2	+31.6
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+2.4
Prior Year Obligation Adjustments. (Estimating)	-5.4	-24.2
Re-allocation from rollaway to TMDE and Fielding. (Estimating)	-9.6	-40.5

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for Current & Prior Inflation. (Support)	+0.5	+1.9
Increase to Initial Spares requirement. (Support)	+11.2	+48.4
Change to Peculiar Support Equipment requirements. (Support)	-0.2	-0.7
Increase to Fielding requirements. (Support)	+7.1	+44.9
Procurement Subtotal	+35.1	+151.4
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation. (Estimating)	--	-0.2
MILCON Subtotal	--	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.204	0.094	--	--	0.069	--	--	--	0.163	0.367

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.367	-0.032	0.101	0.114	0.280	0.449	0.003	0.218	1.133	1.500

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) FY86-90 GUN PRODUCTION:
McDonnell Douglas Hlcptr, Mesa, AZ
DAAA09-86-C-0438, FFP
Award: February 13, 1986
Definitized: December 11, 1986

Initial Contract Price		
Target	Ceiling	Qty
$29.5	N/A	761

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$142.0	N/A	4081	$142.0	$142.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variance information is not required for this FFP contract.

Total contract price of $142.0M includes $132.7M for BFVS quantity of 3832 and $9.3M for Navy quantity of 249.

(U) FY88-91 TURRET DR PROD:
General Electric Co., Pittsfield, MA
DAAA09-88-C-0190, FFP
Award: February 28, 1988
Definitized: April 28, 1989

Initial Contract Price		
Target	Ceiling	Qty
$84.5	N/A	1079

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$171.3	N/A	2339	$171.3	$171.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variance information is not required for this FFP contract.

Total contract price of $171.3M includes $159.7 for BFVS quantity of 2339 and $11.6M for FMS quantity of 200.

15. (U) Contract Information (Cont'd):

(U) FY89-91 TRANS PRODUCTION:
General Electric Co., Pittsfield, MA
DAAE07-89-C-A005, FFP
Award: December 7, 1988
Definitized: August 31, 1989

Initial Contract Price		
Target	Ceiling	Qty
$148.5	N/A	1852

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$370.8	N/A	3361	$370.8	$370.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variance information is not required for this FFP contract.

Total contract price of $370.8M includes $170.9M for BFVS quantity of 1852, $199.9M for MLRS, FMS, and other customers.

(U) FY 90-91 TOW PROD:
Hughes Aircraft Co., El Segundo, CA
DAAH01-90-C-0369, FFP
Award: April 24, 1987
Definitized: September 28, 1990

Initial Contract Price		
Target	Ceiling	Qty
$77.8	N/A	698

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$93.8	N/A	1200	$93.8	$93.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variance information is not required for this FFP contract.

Current contract price of $93.8M is for 1200 Army BFVS.

15. (U) Contract Information (Cont'd):

(U) FY90/91 VEH PROD:
FMC Corporation, San Jose, CA
DAAE07-90-C-A011, FFP
Award: May 17, 1991
Definitized: May 17, 1991

Initial Contract Price		
Target	Ceiling	Qty
$1184.9	N/A	1738

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1333.9	N/A	1942	$1333.9	$1333.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variance information is not required for this FFP contract.

Total contract price of $1333.9M includes $825.2M for 1202 BFVS A2s, and $508.7 for FMS, MLRS and other customers.

(U) FY90-93 MLRS CHASSIS PRD:
FMC Corporation, San Jose, CA
DAAE07-90-C-A011, FFP
Award: May 17, 1991
Definitized: May 17, 1991

Initial Contract Price		
Target	Ceiling	Qty
$63.6	N/A	131

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$112.2	N/A	219	$114.0	$114.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variance information is not required for this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 82.4% (28 yrs/34 yrs)

(2) Percent Program Cost Appropriated: 97.8% ($9948.7 / $10168.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY66-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	685.3	-	-	-	685.3
Procurement	9234.1	79.7	87.4	52.4	9453.6
MILCON	29.3	-	-	-	29.3
O&M	-	-	-	-	-
Total	9948.7	79.7	87.4	52.4	10168.2

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY72 Dollars Nonrec	Flyaway FY72 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army								
1966				1.6	1.2	1.2	1.2	2.7
1967				6.6	5.3	5.3	5.3	3.2
1968				2.8	2.4	2.4	2.4	3.6
1969				5.4	4.8	4.8	4.8	4.7
1970				1.9	1.8	1.8	1.8	5.5
1971				5.3	5.2	5.2	5.2	5.2

16c. (U) Program Funding Summary (Cont'd):

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

Fiscal Year	Qty	Flyaway FY72 Dollars Nonrec	Flyaway FY72 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
1972				2.1	2.2	2.2	2.2	4.6
1973				9.4	10.1	10.1	10.1	4.3
1974				17.2	20.1	20.1	20.1	8.0
1975				12.9	16.6	16.6	16.6	10.9
1976				24.0	32.8	32.8	32.8	6.6
197T				5.8	8.2	8.2	8.2	2.9
1977				39.9	57.5	57.5	57.5	2.6
1978				32.2	49.9	49.9	49.9	6.8
1979				25.2	43.5	43.5	43.5	8.4
1980				20.6	38.7	38.7	38.7	10.6
1981				20.0	41.5	41.5	41.5	10.6
1982				41.8	92.2	92.2	92.2	7.6
1983				22.8	52.4	52.4	52.4	4.9
1984				12.6	30.1	30.1	30.1	3.8
1985				19.2	47.1	47.1	47.1	3.4
1986				7.9	19.9	19.9	18.1	2.8
1987				17.5	45.6	45.6	45.5	2.7
1988				8.0	21.5	21.5	21.3	3.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY72 Dollars Nonrec	Flyaway FY72 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1989				7.4	20.7	20.7	17.9	4.2
1990				2.2	6.3	6.3	6.0	4.0
1991				2.5	7.7	7.7	7.0	4.3
Subtot				374.8	685.3	685.3	679.4	
Appropriation: 2033 Proc of Weapons & Tracked Combat Veh								
1969		0.4		0.4	0.4	0.4	0.4	2.7
1979		18.9		18.9	39.2	39.2	39.2	9.0
1980	100	18.6	97.9	124.6	275.5	275.5	275.5	11.8
1981	400	10.3	214.6	262.9	677.3	677.3	677.3	11.6
1982	600	1.4	282.3	316.1	880.4	880.4	880.4	14.3
1983	600		212.8	273.9	823.6	823.6	823.6	9.0
1984	600	12.1	220.5	299.3	928.1	928.1	927.6	8.0
1985	655	0.6	241.3	288.7	917.5	916.1	909.5	3.4
1986	716	3.8	215.9	250.9	823.5	823.5	822.4	2.8
1987	662	1.5	229.2	255.0	870.2	870.2	862.2	2.7
1988	550	1.4	186.6	207.2	732.3	732.3	723.6	3.0
1989	641	0.4	185.9	195.2	715.6	715.6	702.7	4.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY72 Dollars Nonrec	Flyaway FY72 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2033 Proc of Weapons & Tracked Combat Veh (Cont'd)								
1990	600		154.0	152.0	575.8	575.3	542.6	4.0
1991	600	3.4	178.0	173.6	675.1	666.5	300.0	4.3
1992				26.9	107.1	96.9	43.2	2.8
1993	54		31.2	47.2	192.5	13.0	0.2	2.4
1994				19.1	79.7			2.4
1995				20.5	87.4			2.3
1996				6.1	26.5			2.3
1997				4.7	21.1			2.2
1998				0.7	3.2			2.2
1999				0.3	1.6			2.2
Subtot	6778	72.8	2450.2	2944.2	9453.6	9033.9	8530.4	

FY79 program dollars represent initial production tooling (no quantities are applicable).

FY83 and prior PAA program and obligations have been adjusted to equal expended.

The shared portion of the Bradley Base Sustainment Program (ICN G80716) was applied as follows: $71.5M in FY93 for the procurement of 54 new vehicles and $57.7M in FY95 or associated support costs to the 54 vehicles.

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY72 Dollars Nonrec	Flyaway FY72 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2050 Military Construction, Army								
1983				3.7	9.4	9.4	9.4	4.9
1984				2.1	5.5	5.5	5.5	3.8
1985				4.1	11.0	11.0	11.0	3.4
1988				1.2	3.4	3.4	3.4	3.0
Subtot				11.1	29.3	29.3	29.3	
Grand Total	6778	72.8	2450.2	3330.1	10168.2	9748.5	9239.1	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady-state, full-rate production baseline of 1080 per year was approved by the Secretary of Defense Decision Memorandum dated February 1, 1980.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		79.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		87.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		52.4		N/A	N/A

There is no production after FY93.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	21/21
Procurement	6418/6418

Procurement deliveries of 6418 are cumulative through March 1993.

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 6882 - @ Peak Rate: 60.0/mo			
FY 72 Base-Year $	0.500	0.000	0.600
Then Year $	0.800	0.000	0.900
@ Qty 6778 (1st three years) - @ Peak Rate: 72.0/mo			
FY 72 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

18. (U) Operating and Support Costs:

18a. (U) Operating and Support Costs (Cont'd):

a. (U) Assumptions and Ground Rules --

Operating and support costs reflect world wide regular Army activity and are presented as average annual cost per fielded M2A2 and M3A2. These costs assume an average operating tempo of 850 miles per year. The source for the cost estimate is the BFVS Baseline Cost Estimate (BCE), dated August 1989. There is no antecedent.

b. (U) Costs -- (FY 1972 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Reg Army M2A2/M3A2	Avg Annual Cost Per (Antecedent)
Spares	0.0	N/A
Ammunition/Missiles	0.0	N/A
Depot Maintenance	0.0	N/A
Replacement Training	0.0	N/A
Military Personnel	0.1	N/A
Modifications/Kits	0.0	N/A
Other Sustainment	0.0	N/A
Total	0.1	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
OMA	4.0	1.8	2.1	---	7.9
Industrial Fund	---	---	---	---	---
Total	4.0	1.8	2.1	---	7.9

18c. (U) Operating and Support Costs (Cont'd):

Footnote to paragraph 18b:
All cost elements had values under $.1M. Only the Military Personnel cost element had values sufficient to round to $.1M.

Footnote to paragraph 18c:
Source OP-18 used.

A-22 MLRS

92-054

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(QSA)823)
PROGRAM: MLRS Rocket System

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Launcher: M270 Multiple Launch Rocket System (MLRS)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
PROGRAM EXECUTIVE OFFICE
TACTICAL MISSILES
ATTN: SFAE-MSL-ML
RSA, AL 35898-5700

COL. WILLIAM S. TAYLOR
Assigned: May 13, 1991
AV 746-1195 COMM (205) 876-1195

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 63778A Project D050, D054
PE 64314A Project D564
PROCUREMENT:
APPN 2032 ICN C65400 (Army)
APPN 2032 ICN C65900 (Army)
APPN 2032 ICN CA0257 (Army)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

OASD(PA) DFOISR 93-C-623

[redacted]

[redacted]

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 00000445, 00000446, 00000447, 00000448, 00000763

5. (U) Related Programs:

M77 Munitions, Bradley Fighting Vehicle, TACFIRE, 10-Ton Truck/Trailer, Scatterable Mine Warhead (German Development), Terminal Guidance Warhead, Field Artillery Meteorological Data System, Test Set AN/USM-410, Sense and Destroy Armor, Army Tactical Missile System (ATACMS) and Advanced Field Artillery Tactical Data System.

6. (U) Mission and Description:

(U) The MLRS is a Multiple Launch Rocket System designed to supplement cannon weapons available to U.S. Division and Corps Commanders for the delivery of a large volume of firepower in a very short time against critical, time sensitive targets. The MLRS Launcher fires both a dual-purpose improved Conventional Submunition Warhead on the M77 Rocket and an improved Conventional Submunition Warhead on the Army TACMS Missile. It will provide an all-weather, indirect fire capability both at midrange and at depth to attack the enemy's indirect fire weapons, Air Defense Systems, and Light Materiel and Personnel Targets in sufficient quantities and density to saturate available cannon weapon fire support. The system has the growth potential to adapt Follow-on Warheads such as Terminal Homing Munitions, Scatterable Antitank Mines, and Chemical, to be fired on Rockets, Ballistic Missiles and Cruise Missiles.

(U) The system consists of an MLRS Launcher, two disposable pods containing either six rockets or one Army TACMS Missile each, a Fire Control System, and an Azimuth Position Reference Unit. The carrier is a derivative of the Bradley/Fighting Vehicle (BFV) which uses the same engine, transmission, and other mechanical systems. The carrier, when configured for MLRS, is designated M993. The rockets/missiles are loaded in the launch pods at the factory, shipped and stored in the pods, and fired from the pods. Fuze settings are accomplished automatically by the Fire Control System.

(b)(1) [redacted]

7. (U) Program Highlights:

a. (U) Significant Historical Developments —

The Department Of The Army (DA) approved a Letter Of Agreement (LOA) for MLRS in September 1975. In January 1977, the Defense System Acquisition Review Council I (DSARC I) approved MLRS to enter validation with two competitive contractors and an option to later enter Maturation/Low Rate Production (LRP) with either one or two primes. In September 1977 Boeing, Seattle and Vought, Dallas were awarded the Competitive Validation Contract for a period of 29 months which was later extended to a 32-month effort for incorporation of design changes to satisfy the German requirement for a Scatterable Mine Warhead. In July 1979, a Memorandum Of Understanding (MOU) on a Cooperative Program was signed by France, Germany, United Kingdom, and the United States. In 1982, Italy was admitted as an associate member of the Basic MLRS Program. The Validation Phase of the program was successfully completed on schedule, within cost, and within Decision Coordinating Paper (DCP) Development Test (DT)/Operational Test (OT) thresholds. The DSARC III held in May 1980 gave approval for MLRS to proceed into maturation, LRP, and initial production facilitization with a Full-Scale Production decision in March 1983. The Terminal Guidance Warhead was initiated with approval of an LOA in October 1980.

(U) A General Officer Program Review (GOPR) conducted in March 1983 led to a full-scale production decision in April 1983. MLRS was also type classified standard in April 1983. The Initial Operational Capability (IOC) MLRS Battery was fielded in March 1983 at Fort Riley, KS. The first overseas unit was deployed to Europe in September 1983 at Baumholder, Germany. The first multiyear contract was awarded in September 1983 to LTV Aerospace and Defense Company (LTVAD) to cover a 5-year firm fixed price contract with Economic Price Adjustment Clause with a negotiated two-year option. (FY88/FY89). The second multiyear procurement contract was awarded 30 June 1989 for a 5-year period (FY89-FY93).

(U) MLRS performed extremely well in Operation Desert Storm (ODS) when significant numbers of MLRS Launchers were deployed. All operational requirements were met, and in most cases exceeded for readiness, reliability, accuracy and maintainability. MLRS units from other coalition members were also involved in ODS and proved the value of the successful operation of this multi-national system. The new upgraded MLRS (Deep Attack Launcher) also demonstrated its enormous capability during first operational firing of the longer range Army Tactical Missile System (ATACMS). The FY91 Congressional Supplemental of $151.9M to replace assets used in ODS also allowed the preservation of the FY92 portion of the Multiyear Procurement (MYP) contract thus, maintaining the economies of rocket production. The 500th MLRS production launcher rolled out in February 1991.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
Second source qualification status was awarded to the European production line on February 18, 1992 by the PM MLRS. The award acknowledged the establishment of a qualified second source for MLRS and allows the MLRS International Corporation (MIC) to balance third party sales between qualified sources per the Memorandum of Understanding (MOU) and provides for common logistical support through NATO Maintenance and Supply Activity (NAMSA) by qualified sources. The culmination of this effort is considered a significant milestone in MLRS history.

(U) Improved Fire Control System (IFCS) acquisition streamlining efforts began with the creation of a Program Executive Officer (PEO)/Missile Command (MICOM) team dedicated to the preparation of acquisition documentation. The team was able to focus on the IFCS effort and to significantly shorten the preparation of this documentation and maintain the accelerated schedule for contract award. The Milestone II In Process Review (IPR) was conducted on September 1, 1992. The decision reached by PEO-Tactical Missiles, the Milestone Decision Authority, was to enter into the 60-month Engineering and Manufacturing Development (EMD) Phase. A letter contract with Loral Vought Systems (LVS) was awarded September 28, 1992.

(U) The Acquisition Decision Memorandum from the Milestone II In Process Review on November 24, 1992 granted approval for Extended Range-MLRS (ER-MLRS) to enter EMD. A 54-month EMD contract was awarded December 23, 1992 to Loral Vought Systems (LVS).

(U) The Reduced Range Practice Rocket (RRPR) continued its progress in FY 92. The first IPR for RRPR was conducted on May 14, 1992. Successful sled and flight tests were conducted in July 1992 at Eglin AFB, FL and at White Sands Missile Range in October 1992. Flight testing will resume in February 1993, with fielding still scheduled for September 1993.

(U) MLRS is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
The Test and Evaluation Master Plan (TEMP) for IFCS has received full concurrence and was signed by PEO-Tactical Missiles on January 7, 1993. RRPR flight testing resumed in February 1993. Fielding is still on schedule for September 1993.

8. (U) Threshold Breaches:
(U) There are "fact of life" RDT&E and Procurement cost breaches to the Acquisition Program Baseline (APB) dated February 14, 1992. A

8. (U) Threshold Breaches (Cont'd):

Program Deviation Report and a Baseline Change Request are being processed as required. There are no Nunn-McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Planning Estimate	Approved Program	Current Estimate
Milestone I	JAN 77	N/A	JAN 77
Validation Contract Award	SEP 77	N/A	SEP 77
Development Test/Operational Test I (Government)			
Start	NOV 79	N/A	NOV 79
Complete	FEB 80	N/A	FEB 80
Milestone IIIA	MAY 80	N/A	MAY 80
Initial Production Delivery-Rckt	JAN 82	N/A	MAY 82
Initial Production Delivery-Lnchr	FEB 82	N/A	SEP 82
Operational Test III Start	JUN 82	N/A	OCT 82
Operational Test III Complete	SEP 82	N/A	MAR 83
Milestone IIIB	N/A	MAR 83	MAR 83
IOC	NOV 82	MAR 83	MAR 83
First Unit Equipped (FUE)			
USAREUR	N/A	AUG 83	AUG 83
USACEGE	N/A	MAR 86	MAR 86
FORSCOM	N/A	MAR 83	MAR 83
EUSA	N/A	JUN 84	JUN 84
TRADOC	N/A	FEB 83	FEB 83
ARNG	N/A	SEP 89	SEP 89
RPC Production Contract Award			
FY93	N/A	AUG 94	DEC 92
Full-Scale Prod Contr Award (MYP I/FY83-89)	N/A	SEP 83	SEP 83
MYP I Option III Award	N/A	DEC 87	DEC 87
MYP I Option IV Award	N/A	NOV 88	NOV 88
First Delivery MYP I	N/A	FEB 85	FEB 85
MYP I Option III	N/A	JUN 89	JUN 89
Full-Scale Prod Contr Award (MYP II/FY89-94)	N/A	JUN 89	JUN 89
MYP II PY1 Award	N/A	JUN 89	JUN 89
MYP II PY2 Award	N/A	DEC 89	DEC 89
First Delivery MYP-I Option III	N/A	N/A	JUN 89
MYP II PY3 Award	N/A	OCT 90	DEC 90
MYP II PY4 Award	N/A	OCT 91	NOV 91
MYP II PY5 Award	N/A	OCT 92	DEC 92(Ch-1)

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) —	Planning Estimate	Approved Program	Current Estimate
First Delivery MYP II			
MYP II PY1	N/A	DEC 90	NOV 90
MYP II PY2	N/A	APR 91	APR 91
MYP II PY3	N/A	APR 92	MAY 92
MYP II PY4	N/A	APR 93	FEB 93
MYP II PY5	N/A	APR 94	MAY 94(Ch-2)
Improved Fire Control System (IFCS)			
PEO In-Process Review 1/	N/A	JUN 92	AUG 92(Ch-3)
Milestone II	N/A	JUN 92	SEP 92
Development Contract Award	N/A	JUL 92	SEP 92
PDR Complete	N/A	NOV 93	NOV 93
CDR Complete	N/A	JUL 94	JUL 94
DT&E			
Start	N/A	JAN 95	JAN 95
Complete	N/A	NOV 96	JAN 97
IOT&E			
Start	N/A	OCT 96	JAN 97
Complete	N/A	MAY 97	JUL 97
Extended-Range MLRS(ER-MLRS)			
PEO IPR(MilestoneII)	N/A	N/A	NOV 92(Ch-3)
EMD Contract Award	N/A	N/A	DEC 92
PDR Complete	N/A	N/A	JUL 93
CDR Complete	N/A	N/A	FEB 95
PPQT			
Start	N/A	N/A	OCT 96
Complete	N/A	N/A	FEB 97
PQT			
Start	N/A	N/A	JUL 98
Complete	N/A	N/A	SEP 98

NOTE: The Approved Program Baseline (APB) is being updated to reflect the Milestone II approved program milestones for IFCS.

b. (U) Previous Change Explanations —

The schedule variances for milestone Initial Production Delivery through IOC are due to the FMC strike which resulted in a four month slip in the MLRS program schedule. ASARC IIIB was downgraded to a General Officer Program Review(GOPR) by the Army which satisfied Milestone IIIB requirements.

Delay in Multiyear II contract award (from March 1989 to June 1989) was due to change in requirements, quantity increases, and

9b. (U) Schedule (Cont'd):
difficulty encountered with finalization of contract negotiations.

MYP-II Program Year 4 and Program Year 5 Awards changed from October 1991 and October 1992 as reflected in the SAE Approved Program Baseline, dated February 26, 1990 to November 1991 and November 1992, respectively, to reflect a more realistic estimate of contract awards based on fund availability.

MYP-II Program Year 3 Award changed from November 1990 to December 1990 and MYP-II PY1 changed from December 1990 to November 1990 to reflect actual award and start of deliveries.

First Delivery MYP-II PY3 changed from April 1992 to May 1992, First Delivery MYP-II PY4 changed from April 1993 to February 1993 and First Delivery MYP-II PY5 changed from April 1994 to February 1994 to reflect actual contract definitization which occurred on September 30, 1991. DA directed additional quantities be added to the contract. These additional quantities must be delivered with the appropriate program year. The contractor has increased production to his maximum rate; therefore, the follow-on program years must be extended to allow insertion of additional quantities.

c. (U) Current Change Explanations —

Ch 1. MYP-II Program Year 5 Award date was changed from November 1992 to December 1992 to reflect actual date of award.

Ch 2. First Delivery MYP-II PY5 date was changed from February 1994 to May 1994 due to conversion of planned tactical rockets to practice rockets.

Ch 3. Both the IFCS Program and ER-MLRS successfully completed In Process Reviews in 1992 and received MDA Milestone II approval to enter EMD. There are the initial entries for ER-MLRS.

d. (U) References —

(U) Planning Estimate:
DCP Number 165, dated May 15, 1979.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 14 February 1992.

10. (U) Performance Characteristics:

a. (U) Performance —

	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

PE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Planning Estimate:
DCP Number 165, dated May 15, 1979.

10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 14 February 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning Estimate	Approved Program	Current Estimate
a. (U) Cost —			
Development (RDT&E)	261.0	312.2	367.2
Procurement	1971.3	2774.7	3048.1
M77	(1624.6)		(1463.6)
Practice Rounds	(97.9)		(157.8)
Launchers	(118.9)		(1292.4)
Total Flyaway	(1841.4)		(2913.8)
Other Wpn Sys	(123.0)		(24.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(6.9)		(109.7)
Construction (MILCON)	0.0	52.8	52.7
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 78 Base-Year $	2232.3	3139.7	3468.0
Escalation	1221.7	3559.8	4002.0
Development (RDT&E)	(39.2)	(125.5)	(187.7)
Procurement	(1182.5)	(3399.7)	(3779.6)
Construction (MILCON)	(0.0)	(34.6)	(34.7)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3454.0	6699.5	7470.0
b. (U) Quantity —			
Development (RDT&E)	10	N/A	10
Procurement	173	833	918
Total	183	833	928

Quantities of other components:

	Current Estimate
Procurement	478,860 Tactical Rockets
	62,994 Practice Rockets

c. (U) Foreign Military Sales/International Cooperative Programs —

Foreign Military Sales to date: Netherlands, Turkey, Bahrain, Saudi Arabia, Japan, NATO Maintenance and Supply Agency (NAMSA) and Special Defense Acquisition Fund (SDAF) equal $445.7M. The increase of $84.2M from FY 91 is due to Saudi Arabia and Japan cases implemented in FY 92.

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Planning Estimate:
DCP Number 165, dated May 15, 1979.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 14 February 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	7470.0	6643.2	7470.0
(2) Quantity	928	829	928
(3) Unit Cost	8.050	8.014	8.050
b. (U) Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	272.0	272.0	238.8
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	38.3	38.3	0.0
Net Total	310.3	310.3	238.8
(2) Quantity	44	44	34
(3) Unit Cost	7.052	7.052	7.024

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	300.2	3153.8	0.0	3454.0
Previous Changes:				
Economic	+16.0	+797.3	-9.6	+803.7
Quantity	-	+1799.0	-	+1799.0
Schedule	-	+18.0	-	+18.0
Engineering	+103.4	-	-	+103.4
Estimating	+6.2	+207.3	+97.0	+310.5
Other	+9.5	+9.1	-	+18.6
Support	-	+136.0	-	+136.0
Subtotal	+135.1	+2966.7	+87.4	+3189.2
Current Changes:				
Economic	-2.7	-65.7	-	-68.4
Quantity	-	+719.3	-	+719.3
Schedule	-	+6.1	-	+6.1
Engineering	+122.7	+21.3	-	+144.0
Estimating	-0.4	+69.8	-	+69.4
Other	-	-	-	-
Support	-	-43.6	-	-43.6
Subtotal	+119.6	+707.2	-	+826.8
Total Changes	+254.7	+3673.9	+87.4	+4016.0
Current Estimate	554.9	6827.7	87.4	7470.0

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	261.0	1971.3	0.0	2232.3
Previous Changes:				
Quantity	-	+786.1	-	+786.1
Schedule	-	-27.5	-	-27.5
Engineering	+44.5	-	-	+44.5
Estimating	+3.0	+15.7	+52.7	+71.4
Other	+3.5	+6.5	-	+10.0
Support	-	+24.0	-	+24.0
Subtotal	+51.0	+804.8	+52.7	+908.5
Current Changes:				
Quantity	-	+255.7	-	+255.7
Schedule	-	-	-	-
Engineering	+55.7	+7.4	-	+63.1
Estimating	-0.5	+28.5	-	+28.0
Other	-	-	-	-
Support	-	-19.6	-	-19.6
Subtotal	+55.2	+272.0	-	+327.2
Total Changes	+106.2	+1076.8	+52.7	+1235.7
Current Estimate	367.2	3048.1	52.7	3468.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: New RDT&E effort for Improved Fire Control System.

Estimating: Increase in cost based on validation phase (VP) program; deletion of RDT&E effort funded by MOU contribution; adjustment in prior year escalation and deletion of anticipated reprogramming. Residual RDT&E requirements resulting from operational testing and development of program sets for system automatic test equipment. Conversion of prior base-year dollars to then-year and cost growth on finalization of R&D contract. Current and prior inflation offset. Decrease in the

13b. (U) Cost Variance Analysis (Cont'd):

estimate for the Improved Fire Control System.

Other: 11-week strike at FMC resulting in a 4-month slip in the program schedule.

Procurement

Economic: Revised escalation indices. Economic adjustment for negative program change.

Quantity: Changes in the originally approved MLRS force structure planning estimate of 183 launchers are an additional 667 launchers, 154,278 tactical rockets, and 22,770 practice rockets. Additional changes resulted from a reduction of the total program of 7 launchers, 60,000 tactical and 16,776 practice rockets. Increase of 20,286 tactical rockets in FY91 to replace assets used in Operation Desert Storm. Increase in FY91 of 3714 tactical rockets and 5592 practice rockets and decrease of 14 launchers.

Schedule: Restoration of production rate. Establishment of a multiyear procurement. Cost savings associated with decrease in procurement buys for launchers.

Estimating: Revised round and launcher cost based on VP program. Revised cost estimate for maturation phase changes to Low Rate Production hardware. Adjustment in prior year escalation; deletion of anticipated reprogramming. Increase in base-year dollars; realignment of advanced materials funding. Estimate associated with quantity changes and reduction of administrative services; reduction in cost of submunitions and revised Economic Price Adjustment forecast multiyear contract. Additional funds for competition-quantity. Expanded MLRS force structure. Variance between actual cost and baseline cost of additional launchers. The overall decrease in production quantities resulted in production and overhead inefficiencies. Increase production and overhead cost resulting from the increase of 20,286 tactical rockets. Correction of prior SAR variances to reconcile Flyaway and Support. Increased cost due to shut down of Bradley line in FY 94. Increased cost due to lower launcher production rates in FY 94-97. Revised estimate due to rocket production termination in FY 93.

Other: Eleven-week strike at FMC resulting in a four-month slip in the program schedule. Funding for Payroll, Travel, Contracts, Total Package Fielding, New Equipment Training, and First Destination

13b. (U) Cost Variance Analysis (Cont'd):

Transportation for FY92-FY97 changed from OMA to MIPA funding.

Support: Refinement of funding requirement for initial spares. Additional spares required to support expanded force structure. Initial spares in FY91 and FY92 were purchased with Army Stock Fund. Support requirements extended three years. Correction of prior SAR variances to reconcile flyaway and support. Revised estimate of initial spares costs.

MILCON

Economic: Revised escalation indices.

Estimating: Addition of MILCON funding requirements to SAR, revised estimate and increase in construction requirements. Refinement of MILCON requirements. Historically MIPA indices had been used to calculate these values, however; MILCON indices were used this year to make proper adjustments. Additional funding in FY 91 of $1.9M.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-2.7
Initial funding of Extended Range-MLRS(ER-MLRS). (Engineering)	+43.5	+95.8
Additional funding of Improved Fire Control System (IFCS). (Engineering)	+12.2	+26.9
Adjustment for current & prior inflation. (Estimating)	-0.5	-0.4
RDT&E Subtotal	+55.2	+119.6
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-58.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	-7.0
Quantity Variance resulting from increase of 99 launchers. (Quantity)	+218.1	+623.2

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Quantity Variance resulting decrease of 2250 tactical rockets. (Quantity)	-8.4	-21.0
Quantity Variance resulting from increase of 23,760 practice rockets. (Quantity)	+46.0	+117.1
Cost increase resulting from the stretch-out of launcher procurement schedule. (Schedule)	--	+5.6
Cost increase due to the change in tactical rounds procurement schedule. (Schedule)	--	+0.5
Procurement costs associated with the Extended Range Rocket (Engineering)	+7.4	+21.3
Adjustment for Current & Prior Inflation. (Estimating)	+5.5	+13.8
Increase in carrier unit cost (FY93-FY94) due to going from MYP to single-year production for Bradley and MLRS launchers. (Estimating)	+23.0	+56.0
Adjustment for Current & Prior Inflation. (Support)	+0.1	+0.2
Transfer of consumable spares from initial spares line to launcher line. (Support)	-21.4	-48.0
Increased other weapon system cost to support Launcher and Extended Range Rocket. (Support)	+1.7	+4.2
Procurement Subtotal	+272.0	+707.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.87	0.79	-12.44	0.03	0.27	0.41	0.02	0.10	-10.82	8.05

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) IFCS DEVELOPMENT:	Initial Contract Price Target	Ceiling	Qty
LTVAD, DALLAS, TX DAAHO1-92-C-0432, CPIF Award: September 28, 1992 Definitized: N/A	$134.0	$134.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$134.0	$134.0	0	$134.0	$134.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

This is a letter contract, NTE $134M. Definitization is expected to be completed in July 1993. Of the total $134M, $107.0 M is for the IFCS and $27.0M for Meteorological Sensor Development. The NTE of $134.0M is exclusive of unexercised options.

b.(U) Procurement --

(U) LAUNCHER MYII:	Initial Contract Price Target	Ceiling	Qty
LTVAD, DALLAS, TX DAAHO1-89-C-0336, FFP/EPA Award: June 1, 1989 Definitized: June 30, 1989	$942.0	N/A	235

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1148.5	N/A	284	$1148.5	$1148.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

The reporting of cost and schedule variances is not required for this FFP contract.

Information in Section 15 is as of January 31, 1993. The above contract values represent a five-year multiyear acquisition. Details by year are as follows.

15. (U) Contract Information (Cont'd):

Initial Contract Price ($M).

	FFP	Quantity Launcher/Tactical/Practice
MYP-1	$176.2	62/17,490/570
MYP-2	$198.7	41/24,000/120
MYP-3	$210.6	44/24,000/1,878
MYP-4	$174.0	44/24,000/5,592
MYP-5	$182.5	44/24,000/5,592

Current Contract Price ($M)

	FFP (Includes only Army funds)	Quantity Launcher/Tactical/Practice (Includes only Army quantities)
MYP-1	$176.1*	Same as initial
MYP-2	$207.1*	Same as initial
MYP-2-OPT	$127.1*	27/16,788/3,756
MYP-3	$212.2	Same as initial
MYP-3-OPT	$ 98.4*	22/24,000/0
MYP-4	$176.8*	44/20,286/9306*
MYP-5	$150.2*	44/1,002/20,046*

*—The increase in MYP-1, MYP-2, and MYP-2-OPT was due to Engineering Change Proposal (ECP) adjustments. The decrease in MYP-3-OPT was due to an Ammonium Perchlorate adjustment. The increase in MYP-4 is due to conversion of 3,714 tactical rockets to practice rockets. The decrease in MYP-5 is a result of realignment of rocket quantities. The rocket quantities in MYP-4 reflect the above-mentioned conversion of 3,714 tactical rockets to practice rockets. The quantity of tactical and practice rockets changed in MYP-5 due to conversion of 20,046 tactical rockets to practice rockets.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 75.0% (18 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 76.8% ($10755.2 / $14001.5)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	378.2	40.9	55.1	80.7	554.9
Procurement	5253.9	238.8	238.8	1096.2	6827.7
MILCON	87.4	-	-	-	87.4
O&M	-	-	-	-	-
Total	5719.5	279.7	293.9	1176.9	7470.0

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1976				1.1	1.0	1.0	1.0	6.9
197T				0.4	0.4	0.4	0.4	2.9
1977				7.2	6.9	6.9	6.9	2.6
1978				44.9	46.4	46.4	46.4	7.0
1979				61.7	70.9	70.9	70.9	8.4
1980				53.8	67.8	67.8	67.8	9.4
1981				50.8	70.0	70.0	70.0	11.9
1982				27.2	40.0	40.0	39.9	7.6
1983				16.9	25.9	25.9	25.9	4.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1984				2.0	3.2	3.2	3.2	3.8
1985				1.1	1.8	1.8	1.8	3.4
1986								
1987								
1988								
1989								
1990								
1991								4.3
1992				9.8	20.2	16.8	4.9	2.8
1993				11.2	23.7	1.6	0.3	2.4
1994				18.9	40.9			2.4
1995				24.9	55.1			2.3
1996				21.4	48.5			2.3
1997				13.9	32.2			2.2
Subtot	10			367.2	554.9	352.7	339.4	

Note: Obligations and disbursements are as of February 28, 1993.

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2032 Missile Procurement, Army								
1980	12	14.7	33.2	49.1	67.0	65.4	65.3	9.7
1981	32	15.7	56.6	74.2	117.8	114.0	113.6	11.9
1982	68	10.0	90.1	112.4	197.1	171.8	170.8	14.2
1983	72	11.6	201.6	235.0	443.5	419.0	417.9	9.0
1984	76		264.4	275.8	533.8	509.4	508.4	8.0
1985	44		243.1	255.8	514.0	486.7	483.9	3.4
1986	44		226.9	227.9	468.9	467.6	467.1	2.8
1987	44		203.3	210.2	449.5	441.6	441.6	2.7
1988	24		178.8	189.3	419.2	398.8	398.3	3.1
1989	62		186.6	198.4	455.7	428.5	420.2	4.2
1990	68		212.5	217.7	516.7	497.0	475.9	4.0
1991	66		251.0	251.9	613.9	613.3	434.8	4.3
1992	44		73.2	74.0	184.8	163.0	32.2	2.8
1993	44		98.9	106.5	272.0	209.0	1.2	2.4
1994	34	3.8	82.2	91.5	238.8			2.4
1995	32	1.8	83.3	89.5	238.8			2.3
1996	42	1.9	96.1	102.2	278.7			2.3
1997	33	2.6	81.3	88.3	246.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
1998	39		93.9	98.9	281.8			2.2
1999	38		94.7	99.5	289.7			2.2
Subtot	918	62.1	2851.7	3048.1	6827.7	4985.1	4431.2	
Note: Obligations and disbursements are as of February 28, 1993.								
Appropriation: 2050 Military Construction, Army								
1982				10.4	16.4	16.4	16.4	7.6
1983				16.3	26.4	26.4	26.4	4.9
1984				11.3	18.5	18.5	18.5	3.8
1985				5.5	9.4	9.4	9.4	3.4
1986				6.4	11.1	11.1	11.1	2.8
1987								
1988								
1989				1.9	3.7	3.7	3.7	4.2
1990								
1991				0.9	1.9	1.9	0.4	4.3
Subtot				52.7	87.4	87.4	85.9	
Grand								

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2050 Military Construction, Army (Cont'd)								
Total	928	62.1	2851.7	3468.0	7470.0	5425.2	4856.5	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady-state, full rate production baseline for MLRS is 76 launchers and 72,000 tactical rockets per year. The Acquisition Decision Memorandum (ADM) for approval of MLRS production was dated March 3, 1983.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	192.4	238.8	515.6	-46.4	+276.8
Procurement Qty	24	34	120	-10	+86
Proc. Unit Cost	8.017	7.024	4.297	+0.993	-2.727
FY 1995					
Procurement Cost	201.5	238.8	508.3	-37.3	+269.5
Procurement Qty	24	32	114	-8	+82
Proc. Unit Cost	8.396	7.463	4.459	+0.933	-3.004
Balance of Proc. (FY 1996 to Complete)	1720.2	1096.2	0.0	+624.0	-1096.2

c. (U) Deliveries (Plan/Actual) —

	To Date
RDT&E	10/10
Procurement	571/572

17c. (U) Production Rate Data (Cont'd):

		Plan	Actual
RDT&E	Rockets	504	470
PROCUREMENT	Tactical Rockets	459510	460662
	Practice Rockets	33702	33702
	Launcher	571	572

Note: These total deliveries are as of February 28, 1993.

d. (U) Approved Design-to-Cost Objective —

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 393 - @ Peak Rate: 10.0/mo			
FY 80 Base-Year $	1.200	1.200	1.500
Then Year $	2.000	2.000	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 80 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

	TACTICAL	PRACTICE	LAUNCHER
M77 Rounds Qty. Totals:	362,832	27,638	393
Peak Rates:	6,000	330	10

	APPROVED PROGRAM	CURRENT ESTIMATE	THRESHOLD
M77 Rounds			
Constant FY80$:	.004	.004	.007
Then-Year $:	.008	.007	
Practice Rounds:			
Constant FY80$:	.003	.003	
Then-Year $:	.005	.006	
Launcher			

17d. (U) Production Rate Data (Cont'd):

Constant FY80$:	1.249	1.578	1.499
Then-Year $:	1.980	2.976	

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules —

The unit for tracking O&S costs is a firing battery. The O&S costs are estimated in an annual Baseline Cost Estimate (BCE) (Latest validation Dec 89) update. The BCE updates operating tempo, reliability/maintainability, maintenance concept, manning and logistics policies. This BCE information is integrated into the annual update of the MIRS O&S Cost Reduction Program and provides the methodology to portray the O&S costs per battery. A typical operating year is selected from the annual BCE update and divided by the number of MIRS batteries deployed to give an O&S cost per battery. This typical operating year is a point in time after the completion of fielding, when the operating and support costs are neither increasing nor decreasing in magnitude due to fielding changes. There is no antecedent program for MIRS.

b. (U) Costs — (FY 1978 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Firing Battery	Avg Annual Cost Per Antecedent
Firing Battery	3.0	N/A
Total	3.0	N/A

c. (U) Contractor Support Costs — (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	0.7	—	—	—	0.7
Industrial Fund	9.9	—	—	—	9.9
Total	10.6	—	—	—	10.6

18c. (U) Operating and Support Costs (Cont'd):
There was no Exhibit OP-18 for MIRS for the current SAR cycle.

N-19 HARM

92-125 2 of 3

*** [redacted] ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: HARM (AGM-88A/B/C)

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
HARM (AGM-88A/B/C)

2. (U) DoD Component: Navy

Joint Participants:
Air Force

3. (U) Responsible Office and Telephone Number:

DEPARTMENT OF THE NAVY	CAPT LARRY D. PFITZENMAIER
ATTN: (PEO-T) (PMA-242)	Assigned: March 17, 1989
1421 JEFFERSON DAVIS HWY	AV 222-7551 ext3210
ARLINGTON, VA 22243-1242	COMM 703 692-7551 ext3210

[redacted]

[redacted]
Declassify on: [redacted]

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

*** [redacted] ***

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4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0205601N Project W1780 (Shared)
PE 0207162F Project 642330
PE 0603303N Project W1807 (Shared)
PE 0603313N Project W1188
PE 0603320F Project 643327
PE 0603320N Project W1807
PE 0603363N Project WSH07 (Shared)
PE 0604360N Project W0553
PROCUREMENT:
APPN 1507 ICN 302227 (Navy)
APPN 3020 ICN M88AAG (Air Force)

5. (U) Related Programs:
None.

6. (U) Mission and Description:
HARM is a tactical air-to-surface missile designed to suppress or destroy land and sea based radars which direct enemy air defense systems. HARM is a design evolution of other ARM weapons (SHRIKE and STANDARD ARM) and is replacing them in the Navy and Air Force inventory. HARM is fully operational on the A-7E, EA-6B, F/A-18, A-6E and F-4G aircraft, and is being integrated on the F-16C/D and F-15C aircraft. Performance characteristics include: high speed, large footprint, high sensitivity to weak signals, and threat reactive software reprogrammability. HARM weighs 807 lbs., is 164 inches long and 10 inches in diameter.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
(U) DCP 93, July 1972, recommended development of the HARM Weapon System. DSARC I Management Review, October 1972, authorized Advanced Development. May 1974, Texas Instruments (TI), won a competitive source selection for integration of the weapon system. DSARC IIA, February 1978, directed the HARM program to proceed to Full Scale Engineering Development with the expanded capability version.

(U) DSARC III was on 30 March 1983. The Secretary of Defense on 20 April 1983 approved full-scale production. FY 84 Congressional action directed the initiation of the HARM Low Cost Seeker (LCS) program.

(U) HARM missiles were first used in combat against Libya in March/April 1986. A total of 40 HARMS were fired with very successful results.

(U) A HARM Improvement Plan (HIP) to expand the anti-radiation

7a. (U) Program Highlights (Cont'd):

industrial base and provide improved missile performance to meet new surface-to-air threats in the 1990's was forwarded to Congress in 1987. HIP used two competing guidance section designs - Block IV and Low Cost Seeker (LCS) (designated the AGM-88C1 and C2 respectfully). The HARM Block IV is a TI upgrade to the existing guidance section. Per congressional language, TI is paying the development costs with the government providing support funding and government furnished equipment. The Low Cost Seeker is a new design for the guidance section that originated at NAVWPNCEN, using microwave and signal processing technology. FY87 Congressional language directed that NAVAIRSYSCOM assume program management of LCS.

(U) HARM missiles were used extensively in the Persian Gulf conflict of January - March 1991. Their deployment brought about a dramatic decrease in Iraqi radar emissions in the initial stages of hostilities. The effectiveness of HARM in its defense suppression mission greatly diminished the ground based threat to coalition air operations, thereby increasing their rate of success and hastening air superiority.

b. (U) Significant Developments Since Last Report --
(U) Low Cost Seeker Developmental and Operational testing ceased due to exaustion of LCS RDT&E funding. Program close-out has begun with completion expected in Sep 93. Acquisition Program Baseline change request to delete all LCS milestones submitted.

(U) Acquisition Program Baseline change request approved 19 Nov 92 for the deletion of LCS milestones NPDM IIIA, NPDM IIIB, and IOC.

(U) This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --

(U) Air Force Block IV Operational Testing completed in February 1993 and favorable report received. Air Force Block IV Engineering Change Proposal approved and production quantities on contract. Navy Block IV OT in progress with completion expected in May 1993. Favorable Navy interim OT report received in January 1993. Navy Block IV ECP approved and production quantities on contract.

8. (U) Threshold Breaches:
There is no current Acquisition Program Baseline (dated 19 Nov 1992) breach. There is no Nunn-McCurdy unit cost breach.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	OCT 72	OCT 72	OCT 72
Weapon System Integration Contract Award	MAY 74	MAY 74	MAY 74
Contract Initial Guided Missile Firing	OCT 76	OCT 76	OCT 76
Milestone IIA (DSARC)	FEB 78	FEB 78	FEB 78
Demonstrate Increased Maneuverability	FEB 79	FEB 79	FEB 79
Prototype Phase DT&E			
Start	MAR 78	MAR 78	MAR 78
Complete	DEC 79	OCT 80	OCT 80
Milestone IIB (DSARC)	SEP 79	NOV 80	OCT 80
Navy Test Evaluation			
Start	APR 80	MAY 81	MAY 81
Complete	SEP 80	OCT 81	OCT 81
Joint Navy OPEVAL/Air Force			
Start	DEC 80	NOV 81	NOV 81
Complete	JUL 81	NOV 82	NOV 82
Initial Prod. Contract (Definitized)	N/A	DEC 81	DEC 81
Full-Scale Prod. Contract (Definitized)	N/A	SEP 82	SEP 82
Milestone III (DSARC)	SEP 81	MAR 83	MAR 83
NAVY IOC (A-7E)	SEP 81	NOV 83	NOV 83
Air Force IOC (F-4G)	AUG 82	SEP 84	SEP 84
IOC on F/A-18 Aircraft (Navy)	N/A	JAN 85	JAN 85
IOC on EA-6B Aircraft (Navy)	N/A	AUG 86	AUG 86

b. (U) Previous Change Explanations --

(U) The Navy Test Evaluation schedule changes were the result of contractor delay in delivering missiles for TECHEVAL and additional delays required to validate new software. Changes in the Joint Navy OPEVAL/Air Force IOT&E date were caused by: contractor's late delivery of TECHEVAL missiles; adverse weather and certain hardware shortages to support NTE; completion of corrective action for problems discovered early in OPEVAL; interfacing problems with the A-7 avionics; and correction of missile technical problems. The DSARC III delays were caused by efforts to resolve OPEVAL/IOT&E testing, and extension of operational testing. The Navy IOC (A-7E) was delayed because of difficulties in reaching a contract agreement for the FY81 production program, and the extension of operational testing. The Air Force IOC (F-4G) change reflects revised production rates and delivery schedule. The new milestone entries reflect the addition of Low Cost Seeker to the program. LCS NPDM IIIA/B revised due to FSED hardware delivery schedule and time required for operational testing. NPDM IIIA (LCS) rescheduled to support LRIP milestone. IOC (LCS) revised due to reduced quantity approved for

9b. (U) Schedule (Cont'd):
pilot production and quantity required for both OT-IIB and IOC. NPDM IIIA (LCS) of January 1992, NPDM IIIB of February 1993, and IOC (LCS) of April 1994 deleted due to LCS program funding termination.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DCP 93A dated 10 July 1978. NDCP dated 6 August 1987.

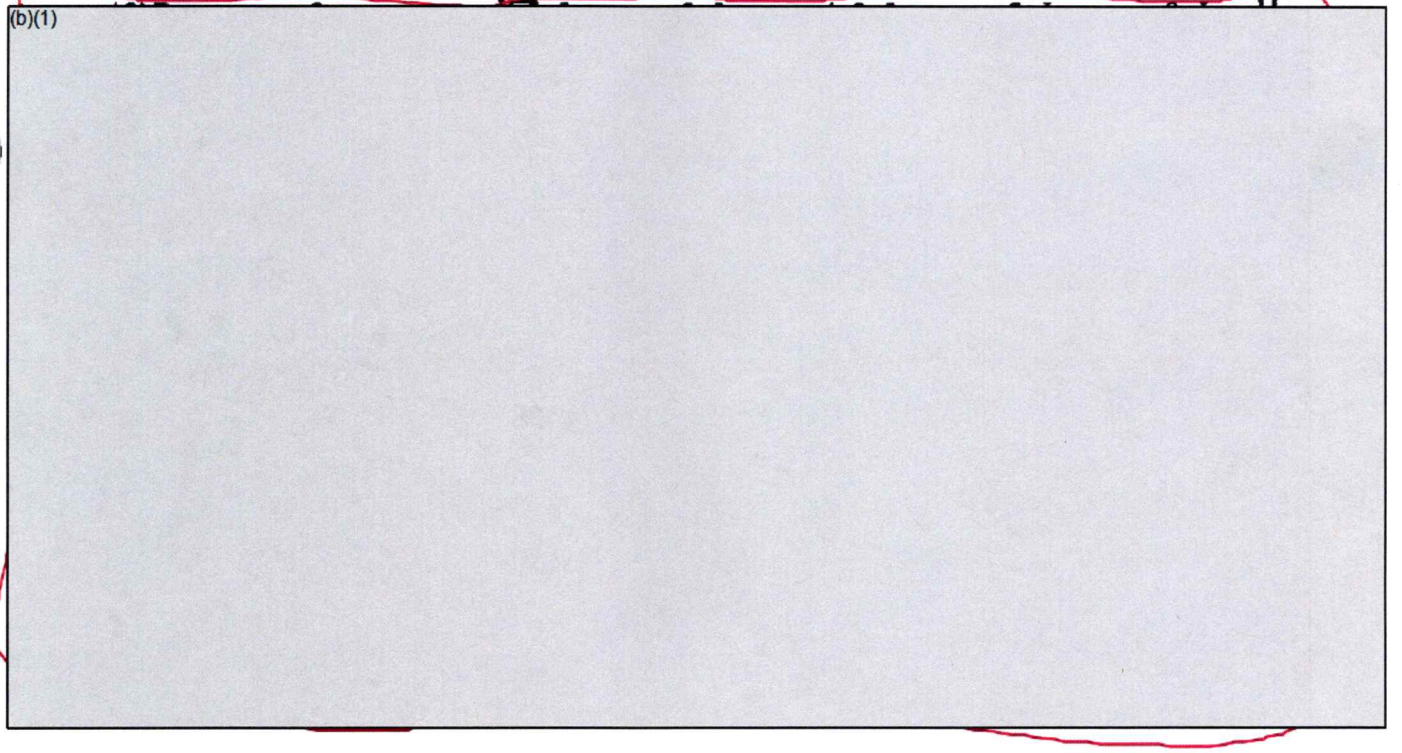
(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 19 November 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length (ft)	13	13.7	/ 13.7	13.7	13.7
Weight (lbs)	780	807	/ 807	807	807
Diameter (in)	10	10	/ 10	10	10

(b)(1)



10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):
improvement has been made over the baseline, and no breach has occurred.

b. (U) Previous Change Explanations --

(U) Weight (lbs), Current Estimate: Change 780 to 807. Incorporation of hardware to facilitate DSARC II direction to expand capability (EXCAP) in frequency and aerodynamic maneuverability.

(b)(1)

(U) Reliability: Missile captive carry MTBF, Current Estimate: revised on basis of inventory usage data through September 1987.
(U) Maintainability, Mean time to fault locate using BIT (sec), Current Estimate: Change 20 to 14. Results of operational testing.
(U) Maintainability, Mean time to repair (min), Avionics "O" level, Current Estimate: Change 55 to 30. Results of operational testing.
(U) Maintainability, Mean time to repair (min), Missile "I" level, Current Estimate: Change 60 to 55. Results of operational testing.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DCP 93A dated 10 July 1978. NDCP dated 6 August 1987.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 19 November 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	226.8	478.1	468.7
Procurement	1455.0	3082.4	2599.9
Hardware	(1064.7)		(2114.8)
Production Support	(220.9)		(259.7)
Total Flyaway	(1285.6)		(2374.5)
Other Weapon Systems Cost	(80.5)		(154.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(88.9)		(71.3)
Construction (MILCON)	0.0	4.3	3.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 78 Base-Year $	1681.8	3564.8	3071.6
Escalation	728.1	4143.5	3167.2
Development (RDT&E)	(12.1)	(185.3)	(176.1)
Procurement	(716.0)	(3954.0)	(2988.1)
Construction (MILCON)	(0.0)	(4.2)	(3.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2409.9	7708.3	6238.8
b. (U) Quantity --			
Development (RDT&E)	99	N/A	99
Procurement	13754	24710	19508
Total	13853	24710	19607

c. (U) Foreign Military Sales/International Cooperative Programs -- Federal Republic of Germany:

Letters of Offer and Acceptance (LOA): FMS Case GY-P-AHD was accepted on 6 December 1985 for the purchase of 368 tactical missiles. Amendment no. 1 to LOA signed 11 November 1986 provides for additonal 576 tatical missiles for a total of 944. Total FMS cost of $270,400,000.

All FRG missiles under GY-P-AHD were delivered by September 30, 1992. A Range firirng case, GY-P-GKP was also delivered during the same time period at a cost of 1.2 million. A follow-up pre-range case for $100,000 is currently in place.

Italy:

Letter of Offer and Acceptance (LOA): FMS case IT-P-AFK was signed on 2 December 1991 for the purchase of 1144 tactical missiles. Case value is $33,369,386. A pre-range planning case, IT-P-GKX was signed in November, 1992 for $108,253.

11c. (U) Total Program Cost and Quantity (Cont'd):

South Korea:

Letter of Offer and Acceptance (LOA): FMS case KS-P-AFK was signed on 2 January 1991 for the purchase of 40 tactical missiles. Case value is $26,439,963. Delivery of these missiles will be complete by April 30, 1993.

Spain:

Letter of Offer and Acceptance (LOA): FMS Case SP-P-AKM was signed on 28 December 1989 for the purchase of 80 tactical missiles. Case value is approximately $34,466,394. Final delivery of these missiles will be complete by April 30, 1993.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DCP 93A dated 10 July 1978. NDCP dated 6 August 1987.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 19 November 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6238.8	6250.0	6238.8
(2) Quantity	19607	19607	19607
(3) Unit Cost	0.318	0.319	0.318
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	251.2	251.2	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	251.2	251.2	0.0
(2) Quantity	846	846	0
(3) Unit Cost	0.297	0.297	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	238.9	2171.0	0.0	2409.9
Previous Changes:				
Economic	-5.2	+353.0	+0.2	+348.0
Quantity	-	+914.0	-	+914.0
Schedule	+28.5	+1856.1	-	+1884.6
Engineering	+250.6	+14.1	-	+264.7
Estimating	+132.3	+161.8	+5.8	+299.9
Other	-	-	-	-
Support	-	+129.0	-	+129.0
Subtotal	+406.2	+3428.0	+6.0	+3840.2
Current Changes:				
Economic	+0.1	-19.3	+0.1	-19.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.4	-1.1	-0.1	-1.6
Other	-	-	-	-
Support	-	+9.4	-	+9.4
Subtotal	-0.3	-11.0	-	-11.3
Total Changes	+405.9	+3417.0	+6.0	+3828.9
Current Estimate	644.8	5588.0	6.0	6238.8

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	226.8	1455.0	0.0	1681.8
Previous Changes:				
Quantity	-	+456.5	-	+456.5
Schedule	+20.0	+554.9	-	+574.9
Engineering	+148.9	+6.7	-	+155.6
Estimating	+73.2	+71.0	+3.1	+147.3
Other	-	-	-	-
Support	-	+52.6	-	+52.6
Subtotal	+242.1	+1141.7	+3.1	+1386.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.2	-0.2	-0.1	-0.5
Other	-	-	-	-
Support	-	+3.4	-	+3.4
Subtotal	-0.2	+3.2	-0.1	+2.9
Total Changes	+241.9	+1144.9	+3.0	+1389.8
Current Estimate	468.7	2599.9	3.0	3071.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Increase in initial manufacturing cost due to delay in prototype effort; increased hardware lead times, and delay of A-6E/HARM integration by one year.

Engineering: FY 80 thru FY 82 cost increase for A-6E/HARM integration and FY 80 cost increase for HARM design improvements and addition of HARM C (Block IV/LCS) program.

Estimating: Increased contractor costs for prototype development; deletion of FY 80 Initial Production funds; increased cost for 45 pilot production

13b. (U) Cost Variance Analysis (Cont'd):

missiles; Congressional addition to start second source development; funding of operational deficiencies in FY 84 thru FY 86; transfer of Project W1240 (A-6E) FY 83 program to airframe program manager; Congressional adjustments and escalation reductions; additional funds for deficiency corrections through FYDP transfer of project W1780 ($47.2M) to Low Cost Seeker program; correction to the base year $ calculation of prior year's SAR baseline; elimination of RDT&E funds from FY 88 through FY 91 reduction of FY 87 funds to address Low Cost Seeker development and revision of program estimate through adaption of Navy escalation indices for combined SAR. Increased funding for LCS and HIP (Block IV). Decreased Low Cost Seeker (LCS) funding of $16.6M due to deletion of FY91 thru 94 RDT&E. $10.4M of FY91 (LCS) funding and $4.0M of FY92 (LCS) funding released to the program office.

Procurement

Economic: Revised escalation indices.

Quantity: Changes to program objective: FY 81/FY 82, -463 missiles; FY 83, +1782 missiles; FY 84, -1002 missiles; FY 86, +551 missiles; FY 87, -68 missiles; FY 88, -181 missiles. Addition of HARM C program, 7620 missiles; FY 89, +599 USAF missiles. Deletion of 87 missiles from 22,657 to 22,570 due to a change in FY90-95 procurement. Deletion of 3062 missiles from 22,570 to 19,508 due to a change in program requirements.

Schedule: One-year delay in initial production; stretchout of Navy procurement offset by approval of second source allowing larger annual procurement quantities, and one year less stretch in program; and Congressional action on FY 83 appropriations; program rephasing in January FY 85 FYDP; decrease in rate tooling. Addition of HARM C program; FY 89, stretch out quantities from FY 93/94 into FY 95. Revised procurement schedule to acommodate lower levels of procurement.

Engineering: Procurement of Improved HARM Warhead FY 90-FY 94.

Estimating: Increases in estimate to adjust for actual cost data derived from contract negotiations; funds for second source development; 1982 cost study revised estimate; deletion of second source fund coincident with Congressional direction to continue as sole source program; decrease in unit cost trend

13b. (U) Cost Variance Analysis (Cont'd):

attributable to credible threat of competition (dual source initiative) and other cost reduction initiatives; multiyear procurement savings; higher cost estimates due to reductions of Air Force quantities; adaption of Navy escalation factors for combined SAR. Addition of HARM C program. Lower cost estimates due to successful contract negotiations. Higher cost estimates due to lower procurement levels for the remainder of the program. Lower overall costs due to earlier than expected program termination.

Support: Decrease in PGSE and ILS requirements associated with decrease in 1002 missiles and implementation of a comprehensive warranty; increase in spares and fleet support in FY 87 through FY 91 for depot initiatives. Increases in fleet support and spares in FY92/93.

MILCON

Economic: Revised escalation indices.

Estimating: Increase in storage requirements; revised estimate.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.4
RDT&E Subtotal	-0.2	-0.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-19.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.2
Adjustment for Current & Prior Inflation. (Estimating)	+7.1	+16.0
Ajustment in FY93 USAF Budget (Estimating)	-2.7	-6.9
FY92 buy unit cost benefitted from FY91 Desert Storm supplemental quantities (Estimating)	-4.6	-10.2

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for Current & Prior Inflation. (Support)	+0.6	+2.2
Increase in fleet support and spares (Support)	+2.8	+7.2
Procurement Subtotal	+3.2	-11.0
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1
MILCON Subtotal	-0.1	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.174	0.017	-0.005	0.096	0.014	0.015	--	0.007	0.144	0.318

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) HARM FY89/90 PRODUCTION:
TEXAS INSTRUMENTS, LEWISVILLE, TX
N00019-88-C-0156, FFP
Award: January 1, 1989
Definitized: January 1, 1989

Initial Contract Price		
Target	Ceiling	Qty
$424.2	N/A	2257

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$775.0	N/A	4064	$850.2	$850.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

15. (U) Contract Information (Cont'd):

Explanation of Change:

CPR information not required for this FFP contract.

(U) HARM FY91 PRODUCTION:	Initial Contract Price		
	Target	Ceiling	Qty
TEXAS INSTRUMENTS, LEWISVILLE, TX N00019-91-C-0003, FFP Award: January 29, 1991 Definitized: January 29, 1991	$262.8	N/A	1440

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$847.6	N/A	4738	$847.6	$847.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

CPR information not required for this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 100.0% (22 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 100.0% ($6238.8 / $6238.8)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY72-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	644.8	-	-	-	644.8
Procurement	5588.0	-	-	-	5588.0
MILCON	6.0	-	-	-	6.0
O&M	-	-	-	-	-
Total	6238.8	-	-	-	6238.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1972				2.1	2.1	2.1	2.1	4.6
1973				6.7	6.7	6.7	6.7	4.4
1974				9.7	9.7	9.7	9.7	8.0
1975				14.3	14.3	14.3	14.3	10.9
1976				27.4	27.4	27.4	27.4	6.6
197T				3.9	3.9	3.9	3.9	2.9
1977				31.4	31.4	31.4	31.4	2.6
1978				28.5	29.7	29.7	29.7	6.8
1979				38.7	44.6	44.6	44.6	8.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1980				50.1	63.8	63.8	63.8	10.6
1981				52.3	72.6	72.6	72.6	10.6
1982				15.2	22.2	22.2	22.2	7.6
1983				3.7	5.6	5.6	5.6	4.9
1984				24.5	38.7	38.7	38.7	3.8
1985				19.4	31.6	31.6	31.6	3.4
1986				13.0	21.9	21.9	21.9	2.8
1987				24.2	41.8	41.8	38.3	2.7
1988				8.8	15.8	15.8	14.5	3.0
1989				5.8	10.8	10.8	10.5	4.2
1990				8.0	15.6	15.6	15.2	4.0
1991				5.2	10.4	10.4	9.8	4.3
1992				1.9	3.9	3.4		2.8
Subtot	99			394.8	524.5	524.0	514.5	
Appropriation: 1507 Weapons Procurement, Navy								
1981	80	8.7	56.6	74.9	120.2	120.2	120.2	11.6
1982	118	11.2	40.9	64.8	113.0	113.0	113.0	14.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1983	160	0.4	44.6	47.7	88.0	88.0	88.0	9.0
1984	318	18.6	63.7	102.1	195.9	195.9	195.9	8.0
1985	813	10.8	123.5	144.9	286.1	286.1	286.1	3.4
1986	767	1.0	99.9	105.3	215.1	215.1	205.5	2.8
1987	994	0.7	109.4	117.1	247.9	247.9	240.6	2.7
1988	766	0.3	81.3	88.7	195.0	195.0	185.9	3.0
1989	1307	0.8	123.0	130.5	298.3	298.2	295.4	4.2
1990	1262	5.2	115.8	129.7	306.7	304.5	298.8	4.0
1991	2261	0.6	189.1	218.2	528.7	525.5	316.8	4.3
1992	749	0.5	72.3	87.7	217.7	190.8	23.2	2.8
1993				12.3	31.3	0.2		2.4
Subtot	9595	58.8	1120.1	1323.9	2843.9	2780.4	2369.4	
Appropriation: 1205 Military Construction, Navy								
1989				1.6	3.1			4.2
1990				1.4	2.9			4.0
Subtot				3.0	6.0			
Navy	9694	58.8	1120.1	1721.7	3374.4	3304.4	2883.9	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 3600 Research, Development, Test + Eval, AF								
1977				0.5	0.5	0.5	0.5	2.6
1978				3.8	4.0	4.0	4.0	6.8
1979				2.0	2.3	2.3	2.3	8.4
1980				1.5	1.9	1.7	1.7	10.6
1981				7.0	9.7	8.5	8.5	10.6
1982				2.9	4.3	1.8	1.8	7.6
1983				3.1	4.7	4.2	4.1	4.9
1984				6.1	9.6	9.2	9.2	3.8
1985				2.9	4.7	4.7	4.6	3.4
1986				10.4	17.5	16.8	16.8	2.8
1987				10.9	18.8	18.8	18.6	2.7
1988				8.6	15.4	15.4	14.9	3.0
1989				8.8	16.3	15.5	13.0	4.2
1990				5.2	10.1	7.8	5.8	4.0
1991				0.2	0.5	0.5	0.4	4.3
Subtot				73.9	120.3	111.7	106.2	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 3020 Missile Procurement, Air Force								
1982	118	9.5	40.3	57.3	99.8	99.8	99.1	14.3
1983	123	3.0	31.8	41.1	75.7	74.1	73.3	9.0
1984	317	16.8	64.9	91.0	174.6	174.5	173.9	8.0
1985	871	13.0	131.6	154.6	305.1	304.8	303.0	3.4
1986	1384	9.4	178.7	195.2	398.6	398.3	395.7	2.8
1987	1510	1.0	164.7	175.7	371.9	371.9	371.8	2.7
1988	1590	0.7	162.6	167.9	369.3	369.3	362.3	3.0
1989	893	3.2	84.2	95.7	218.8	218.8	218.8	4.2
1990	576	1.2	52.9	56.9	134.5	134.5	130.6	4.0
1991	1220	1.3	100.6	107.2	259.7	258.3	40.7	4.3
1992	465	1.1	42.1	46.8	116.2	115.3	7.3	2.8
1993	846	1.3	79.7	86.6	219.9	193.8	0.5	2.4
Subtot	9913	61.5	1134.1	1276.0	2744.1	2713.4	2177.0	
USAF	9913	61.5	1134.1	1349.9	2864.4	2825.1	2283.2	
Grand Total	19607	120.3	2254.2	3071.6	6238.8	6129.5	5167.1	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady-state, full-rate production baseline of 283 per year was approved by DSARC III in March 1983.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

FY93 was the last year for HARM procurement.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	99/99
Procurement	14711/14952

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 5000 - @ Peak Rate: 185/mo			
FY 78 Base-Year $	93.3	193.1	200.0
Then Year $	127.8	363.4	375.2
@ Qty 0 (1st three years) - @ Peak Rate: 0/mo			
FY 78 Base-Year $	0.0	0.0	0.0
Then Year $	0.0	0.0	0.0

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

- 20 Year period
- All costs in FY90 constant dollars
- O&S cost structure in accordance with OSD WBS guide for missiles
- There are no antecedent systems for HARM

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Missile	Avg Annual Cost Per Missile (Antecedent)
Operations and Support	665.0	N/A
Below Depot Maintenance	776.0	N/A
Depot Maintenance	407.0	N/A
Depot Supply & Tech. Sup	628.0	N/A
Second Destination Trans	37.0	N/A
Sustaining Investments	1183.0	N/A
Total	3696.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	5.3	0.6	---	---	5.9
Total	5.3	0.6	---	---	5.9

N-21 LAMPS MK III

92 128

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: LAMPS MKIII

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
Air ASW, Assault and Special Mission Programs (PMA-299)
JEFFERSON PLAZA 1, RM 720
WASHINGTON, DC 20361-1299
CAPT J. W. HADDOCK, III
Assigned: February 21, 1992
AV 286-1534 COMM 703-746-1534

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604212N Project W1707
PROCUREMENT:
APPN 1506 ICN 0180 (Navy)
APPN 1810 ICN 4255 (Navy)

[redacted]

[redacted]

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MAY 26 1993

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DEPARTMENT OF DEFENSE

(THIS PAGE IS UNCLASSIFIED)

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OASD(PA) Dec 93 702

5. (U) Related Programs:

Army: UH-60A BLACK HAWK, EH-60A Quickfix.

Air Force: HH-60D NIGHT HAWK, MH-60G PAVE HAWK, MH-60K Special Operations Helicopter.

Navy: Kidd Class Guided Missile Destroyer (DDG-993 Class), Arleigh Burke Class Guided Missile Destroyer (DDG-51 Class), Perry Class Guided Missile Frigate (FFG-7 Class), Spruance Class Destroyer (DD-963 Class), Ticonderoga Class Aegis Cruiser (CG-47), Shipboard Sonar System AN/SQQ-89, Penguin Missile, Aircraft Carrier Inner Zone Anti-Submarine Warfare Helo (SH-60F), Helicopter Combat Support Aircraft (HH-60H), Airborne Low Frequency Sonar (ALFS).
Coast Guard: Medium Range Recover Helicopter (HH-60J).

6. (U) Mission and Description:
The Light Airborne Multi-Purpose System (LAMPS MK III) is a computer integrated ship/helicopter system that increases the effectiveness of surface combatants. It is their main battery and is optimized for Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASUW). Secondary missions include Search and Rescue (SAR), Medical Evacuation (MEDEVAC), Vertical Replenishment (VERTREP), and Communications Relay (COMREL). The ship provides sensor processing, command and control, integrates LAMPS MK III information gained with other sensors and provides the landing and traversing system, visual landing aids, and maintenance and support facilities for the aircraft. The helicopter provides a remote platform for deployment of sonobuoys and torpedoes, processing of acoustic and Magnetic Anomaly Detection (MAD) sensor information and an elevated platform for radar and Electronic Warfare Support Measures (ESM). LAMPS MK III supplements but does not replace any existing defense systems.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
LAMPS development was initiated in 1969 with the requirement for a manned helicopter aboard destroyer-class ships to enhance ASW and Anti-Ship Surveillance and Targeting (ASST). Validation Phase was completed in December 1976. Full Scale Development authorization (DSARC IIC) was granted in February 1978. First flight occurred in December 1979 followed by a successful total weapon system demonstration in May 1980. Weapon System testing at sea was successfully conducted after installation of LAMPS MK III ship equipments in USS MCINERNEY (FFG-8). Provisional Approval for Service Use (PASU) was granted in September 1981 following successful OPEVAL of the Helicopter Landing System (HLS) and exercise of entire weapon system in various operational scenarios. A November 1981 Secretary of Defense Decision Memorandum (SDDM) granted approval for limited

7a. (U) Program Highlights (Cont'd):

production. Approval for Service Use (ASU) for the Helicopter Landing System (HLS) and Sonar Signal Processing System (AN/SQQ-28) was granted in June 1982. A SDDM was issued in December 1982, following DSARC III in June, granting approval for production.

The baseline program planned procurement of 204 aircraft over a four year period and 110 ship systems. The December 1982 SAR estimate extended the aircraft procurement to eleven years and reduced ship systems to 94. The December 1983 SAR estimate increased ship systems to 97. With the addition of the reserve FFG-7 class ships and the DDG-51 class ships the total number of ship systems to be procured is 142.

The first production aircraft was delivered in September 1983, one month ahead of schedule. The first LAMPS MK III training squadron was established at Naval Air Station, North Island in January 1983. Initial Operating Capability was achieved in July 1984.

A Chief of Naval Operations Executive Board (CEB) decision in April 1984 added an ASUW capability to the LAMPS MK III weapon system by incorporating the Norwegian manufactured PENGUIN anti-ship missile.

In June 1987, in response to Persian Gulf initiatives, CNO authorized 25 SH-60B aircraft to be modified for the Middle East Force with the following self-protection equipment: ARC-182 UHF/VHF radio, M-60 machine guns, ALE-39 Chaff/Flare dispenser and ALQ-144(VP) dual phase jammer. Self-protection for the SH-60B, commencing with FY 1988 production aircraft, was directed by Congress in December 1987. For SAR reporting purposes, the Shipboard Radio Terminal Set (SRQ-4) and Sonar Signal Processing System (SQQ-28) were transferred to Surface Ship ASW Combat System Program Office (PMS-411) in December 1986 in accordance with NAVCOMPT letter dated 18 November 1986. Twelve aircraft were configured with ALQ-156 Pulse Doppler Radar in December 1988.

The Block I Upgrade began with FY90 procurement of Lot IX aircraft. Mission area improvements to the SH-60B aircraft for the Block I Upgrade are the incorporation of a Global Positioning System (GPS), 99 channel sonobuoy receiver, MK-50 torpedo capability and an enhanced survivability protection system. Additionally, 28 kits are being procured with the Block I Upgrade to modify the existing LAMPS MK III avionics system to provide for the capability to carry and launch the Penguin anti-ship missile. Other features of the Block I Upgrade include engineering reliability and maintainability improvements.

In response to an urgent CINC request for near term LAMPS Forward

7a. (U) Program Highlights (Cont'd):

Looking Infrared Radar (FLIR) capability to support Desert Shield/Desert Storm, a contract with IBM was signed 28 Dec 90 to deliver and integrate 5 AN/AAQ-16 FLIRs. Four of the FLIRs were installed by 30 Jan 91 on SH-60B helicopters embarked on board USS NICHOLAS (FFG-47), USS CURTS (FFG-38) and USS JARRETT (FFG-33). The fifth FLIR Kit was installed on NATC aircraft for test and evaluation.

A contract was signed 31 Dec 1990 for Phase I of the LAMPS MK III Block II Upgrade. Phase I consists of the generation and delivery of specifications and documentation required to complete Block II effort.

On 6 Feb 91, the revised baseline was approved, which increased the procurement objective from 204 to 260 aircraft.

b. (U) Significant Developments Since Last Report --
As of December 31, 1992, LAMPS MK III entered its third year without a major mishap (Class A). This milestone represents 127,300 flight hours including extended deployments in support of Desert Storm and the Somalian Relief effort. Mission capability rates continue to exceed CNO goals.

As of 31 December 1992, the Navy has accepted a total of 147 fully integrated production aircraft and 94 HLS's for ship installation.

This LAMPS MK III System is expected to meet all mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently no breaches of the 6 February 1991 NAE Approved Acquisition Program Baseline. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Program Initiated (TSOR issue)	FEB 69	FEB 69	FEB 69
DSARC I/II	JUN 72	JUN 72	JUN 72
DSARC IIA	JUL 73	JUL 73	JUN 73

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Select System Prime Contractor (Phase I System Integration)	APR 74	APR 74	APR 74
DSARC IIB	MAY 76	MAY 76	MAY 76
Award Full-Scale Development Sustaining Engineering Contracts (Prototype System)	SEP 77	SEP 77	SEP 77
DSARC IIC	FEB 78	FEB 78	FEB 78
First Prototype Aircraft Flight	N/A	DEC 79	DEC 79
First Prototype Aircraft Delivery	NOV 79	JAN 80	JAN 80
Complete Prototype Ship System Installation	OCT 80	NOV 80	NOV 80
Complete OT-IIA, HLS OPEVAL	N/A	JUN 81	JUN 81
Program Review	AUG 81	SEP 81	SEP 81
Award Aircraft Pilot Production Contract	OCT 81	OCT 81	OCT 81
Complete Initial Operational Evaluation	JAN 82	FEB 82	FEB 82
Complete Initial Board of Inspection and Survey Trials	JAN 82	SEP 82	SEP 82
DSARC III	APR 82	JUN 82	JUN 82
Award Full-Scale Production Contract	OCT 82	DEC 82	DEC 82
First Production Ship ASW System Delivery	JUL 83	JUN 83	JUN 83
First Pilot Production Aircraft Delivery	OCT 83	SEP 83	SEP 83
CEB Decision on PENGUIN Missile	APR 84	APR 84	APR 84
IOC	JUL 84	JUL 84	JUL 84
Navy Support Date (NSD)	DEC 87	DEC 87	DEC 87

b. (U) Previous Change Explanations --

On September 22, 1981, a Program Review versus the planned DSARC IIIA was conducted on the LAMPS MK III Weapon System by the Under Secretary of Defense for Research and Engineering. Board of Inspection and Survey Initial Trials were delayed due to non-availability of aircraft and OPEVAL concurrency. Scope was reduced to eliminate duplications of test effort. DSARC III was completed on June 29, 1982.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DCP No. 85 dated March 5, 1979.

9d. (U) Schedule (Cont'd):

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 06 February 1991.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations --

The increase in aircraft maximum gross weight is the result of incorporating approved Engineering Change Proposals. The decrease in MFHBF SH-60B SEAHAWK is the result of a broader statistical base and correction of calculation from previous reports. The changes in DMMH/FH SH-60B SEAHAWK and MTTR Air Vehicle are derived from maintenance statistics and indicate performance less than prior estimates. Changes to MFHBF SH-60B SEAHAWK Air Vehicle & Minimum Avionics, DMMH/FH SH-60B SEAHAWK (O-Level Repair) and Operational Availablilty are based upon current 3-M data. The MTTR (Air Vehicle) changed based upon current 3-M data. MFHBF SH-60B SEAHAWK changed based on current 3-M data.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DCP No. 85 dated March 5, 1979.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 06 February 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	579.7	615.7	681.2
Procurement	1683.5	2694.3	2745.0
Airframe & Changes	(342.1)		(905.5)
Engine	(67.9)		(113.9)
Electronics & Comm	(399.6)		(164.2)
Armament & Other GFE	(18.1)		(21.6)
Weapons System Integration	(62.2)		(591.9)
Total Flyaway	(889.9)		(1797.1)
Other Support	(269.6)		(285.3)
OP,N Sailaway	(124.4)		(0.0)
OP,N Support	(40.3)		(179.6)
OP,N Spares	(36.0)		(2.8)
Total Other Wpn Sys	(470.3)		(467.7)
Peculiar Support	(169.9)		(292.1)
Initial Spares	(153.4)		(188.1)
Construction (MILCON)	9.0	12.3	12.2
Ops. and Maint. (O&M)	124.5	N/A	45.9
Total FY 76 Base-Year $	2396.7	3322.3	3484.3
Escalation	1510.9	4629.3	4629.5
Development (RDT&E)	(142.1)	(242.1)	(310.6)
Procurement	(1248.1)	(4378.0)	(4259.5)
Construction (MILCON)	(6.4)	(9.2)	(9.3)
Ops. and Maint. (O&M)	(114.3)	(N/A)	(50.1)
Total Then-Year $	3907.6	7951.6	8113.8
b. (U) Quantity --			
Development (RDT&E)	5	5	5
Procurement	204	260	260
Total	209	265	265

c. (U) Foreign Military Sales/International Cooperative Programs -- A Spanish Letter of Offer and Acceptance was signed January 15, 1985 for an estimated total cost of $177.1M for the purchase of 6 LAMPS MK III helicopters and associated spares, support equipment, training and services. Four Helicopter Landing Systems (HLS) at approximately $6.5M are being purchased under a separate Spanish FMS case. The Australian government has purchased 6 HLS at approximately $9.1M through FMS.

d. (U) Nuclear Costs -- None.

11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Development Estimate:
DCP No. 85 dated March 5, 1979.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 06 February 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	8113.8	7868.7	8113.8
(2) Quantity	265	266	265
(3) Unit Cost	30.618	29.582	30.618
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	254.3	254.3	230.3
Less CY Adv Proc	45.8	45.8	20.7
Plus PY Adv Proc	20.7	20.7	27.2
Net Total	229.2	229.2	236.8
(2) Quantity	12	12	7
(3) Unit Cost	19.100	19.100	33.829

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	721.8	2931.6	15.4	238.8	3907.6
Previous Changes:					
Economic	+25.2	-222.8	+1.1	-26.9	-223.4
Quantity	-	+951.2	-	-	+951.2
Schedule	-	+1528.9	-	-	+1528.9
Engineering	+92.3	+317.7	-	-	+410.0
Estimating	+117.0	+678.8	+5.0	-	+800.8
Other	-	-	-	-	-
Support	+1.6	+607.9	-	-115.9	+493.6
Subtotal	+236.1	+3861.7	+6.1	-142.8	+3961.1
Current Changes:					
Economic	-6.2	-157.3	-	-	-163.5
Quantity	-	-13.2	-	-	-13.2
Schedule	-	+27.4	-	-	+27.4
Engineering	-	+13.5	-	-	+13.5
Estimating	+40.1	+165.1	-	-	+205.2
Other	-	-	-	-	-
Support	-	+175.7	-	-	+175.7
Subtotal	+33.9	+211.2	-	-	+245.1
Total Changes	+270.0	+4072.9	+6.1	-142.8	+4206.2
Current Estimate	991.8	7004.5	21.5	96.0	8113.8

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	579.7	1683.5	9.0	124.5	2396.7
Previous Changes:					
Quantity	-	+178.3	-	-	+178.3
Schedule	-	+180.4	-	-	+180.4
Engineering	+44.0	+105.1	-	-	+149.1
Estimating	+41.1	+395.5	+3.2	+0.1	+439.9
Other	-	-	-	-	-
Support	+1.2	+95.6	-	-78.7	+18.1
Subtotal	+86.3	+954.9	+3.2	-78.6	+965.8
Current Changes:					
Quantity	-	-3.6	-	-	-3.6
Schedule	-	-0.5	-	-	-0.5
Engineering	-	+4.2	-	-	+4.2
Estimating	+15.2	+47.8	-	-	+63.0
Other	-	-	-	-	-
Support	-	+58.7	-	-	+58.7
Subtotal	+15.2	+106.6	-	-	+121.8
Total Changes	+101.5	+1061.5	+3.2	-78.6	+1087.6
Current Estimate	681.2	2745.0	12.2	45.9	3484.3

Procurement variance contained AP,N, OP,N & O&M,N in SAR submissions prior to 31 December 1990. Procurement variance now contains only AP,N and OP,N.

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Increased cost due to addition of Advance Signal Processor 64K Random Memory Module; validation of OPEVAL corrections and addition of Pre-Planned Product Improvement (P3I) program.

Estimating: Refinement of prior estimates; reconfiguration of test and evaluation ship; addition and refinement of Preplanned Product Improvement (P3I) Program;

13b. (U) Cost Variance Analysis (Cont'd):

addition of Block II Upgrade funding; refinement of Block II cost estimates; inclusion of Block II Upgrade outyear funding; correction of FY81 and FY82 funding reportable to LAMPS Program and correction of errors in previous SARs.

Support: Cost change to fund tasks directed by Office of the Secretary of Defense relating to availability.

Procurement

Economic: Revised escalation indices; renegotiated labor rates.

Quantity: Deletion of 14 FFG Class ships from LAMPS MK III backfit program and increase of procurement objective from 204 to 260 aircraft; addtional aircraft procurement to replace Desert Storm loss.

Schedule: Revised aircraft procurement schedule and ship installation schedules; SQQ-28 slipped buy; SRQ-4 accelerated buy; HLS accelerated buy; revised aircraft procurement schedule in outyears.

Engineering: Design engineering for production tooling; engineering testing; production impact of development derived improvements to aircraft, avionics, and engines; incorporation of an approved ECP matrix; ECPs required to revise Block II Upgrade; Mid-East Force ECP for electronics, armament and installation; incorporation of E-1 Harness, Solid Shaft ECPs and alernate source Auxiliary Power Unit; ALFS realignment.

Estimating: Impact of projected change in Army's Black Hawk procurement plan; refinement of prior estimates to reflect contract actuals and additional procurement data; impact of six Spanish FMS aircraft; refinement of estimates based on multi-year procurement; an increase in negotiated overhead rates of major contractor and refinement of prior estimates based on additional procurement data; refinement of ship electronics and HLS procurement; loss of cost savings due to cancellation of multiyear procurement and return to single year buys; refinement of Block II procurement estimates; increased cost due to loss of business base of contractor program and increased overhead rates of prime contractor; refinement of estimate for integration costs in IBM follow-on multiyear; correction of variance categorization from previous SARs.

Support: Refinement of support requirements, equipment and spares to support revised aircraft procurement

13b. (U) Cost Variance Analysis (Cont'd):

schedules based on more accurate cost history and procurement data; refinement of estimates for pubs/ technical data; reprogramming of support and spares; transfer of SQQ-28 and SRQ-4 to PMS-411 for SAR reporting responsibilities; correction of variance categorization from previous SAR; inclusion of O&MN installation funds in the OP,N appropriations as support and spares; increased support and initial spares to support increased procurement objectives; reductions due to Defense Management Review direction; revised OP,N support requirements.

MILCON

Economic: Revised escalation indices.

Estimating: Refinement of requirements for Applied Instruction Building and Operational/Maintenance Trainer Building; transfer of ship related MILCON cost to PMS-411; transfer of LAMPS ship related costs to PMA-299.

O & M

Economic: Revised escalation indices.

Quantity: Deletion of 14 FFG class ship from LAMPS MK III backfit program; correction of variance categorization errors in previous SARs.

Schedule: Revised installation schedules for ship equipments; slipped SQQ-28 buy; SRQ-4 accelerated buy; HLS accelerated buy; correction of various categorization errors in previous SARs.

Estimating: Refinement of ship electronics and HLS installation costs; realignment of ship installations; correction of variance categorization errors in previous SARs.

Support: Correction of various categorization errors in previous SARs.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Change in inflation indices (Economic)	N/A	-6.2

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
The ALFS R&D Program added Reliability Demo Test and a 2nd configured aircraft test asset to program. (Estimating)	+15.2	+40.1
RDT&E Subtotal	+15.2	+33.9
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-157.3
Reduction in procurement total to reflect revised procurement objective from 261 to 260. (Quantity)	-3.6	-13.2
Schedule changes applicable to reflect reduction of one aircraft since baseline. (Schedule)	-0.6	-5.4
Engineering change applicable to reflect reduction of one aircraft since baseline. (Engineering)	-0.4	-1.1
Engineering change applicable to reflect reduction of one aircraft since baseline. (Estimating)	-1.4	-2.4
Revised outyear procurement schedule for aircraft. (Schedule)	+0.1	+32.8
Deletion of UYS-1 buyout ECP from budget. Addition of Cockpit ECP. Addition of Cockpit NRE. Addition of Service Life Assessment Program (SLAP) NRE. (Engineering)	+4.6	+14.6
SH-60B cost adjustments due to qty stream changes for SH-60F, HH-60H and, J aircraft; changes in airframe manufacturer's labor and overhead rates increases in costs for Sys Integrator. (Estimating)	+49.2	+167.5
Increased Field Activity support and increased funding for trainers. (Support)	+34.9	+114.0
Completion of SRQ-4 buy, addition of SQQ-28 (Sonar Signal Processing Systems), and FLIR procurement. (Support)	+23.8	+61.7
Procurement Subtotal	+106.6	+211.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.697	-1.460	-0.412	5.873	1.598	3.796	--	2.526	11.921	30.618

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) LAMPS MK III:	Initial Contract Price		
	Target	Ceiling	Qty
SIKORSKY, STRATFORD, CT N00019-87-C-0340, FFP Award: March 31, 1988 Definitized: November 28, 1989	$115.9	N/A	12

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$115.9	N/A	12	$115.9	$115.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Contract N00019-87-C-0340 is a firm fixed price contract with options for Lots VIII and IX aircraft. Both options have been definitized.

(U) LAMPS MK III:	Initial Contract Price		
	Target	Ceiling	Qty
IBM, OWEGO, NY N00019-89-D-0027, FFP Award: December 16, 1988 Definitized: June 22, 1990	$239.8	N/A	36

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$239.8	N/A	36	$239.8	$239.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):
Contract N00019-89-D-0027 is a fixed price contract with options for Lots IX, X, XI and XII avionics integration. Lots IX and X have been definitized. Options for Lots XI and XII are for FY 92 and 93 procurements respectively.

(U) LAMPS MK III - AIRFRAME:	Initial Contract Price		
	Target	Ceiling	Qty
SIKORSKY AIRCRAFT DIV., STRATFORD, CT N00019-89-C-0153, FFP Award: June 19, 1990 Definitized: January 24, 1992	$169.3	N/A	18

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$169.3	N/A	18	$169.3	$169.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 71.4% (25 yrs/35 yrs)

(2) Percent Program Cost Appropriated: 65.1% ($5285.0 / $8113.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY69-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2003)	Total
RDT&E	800.5	45.3	35.1	110.9	991.8
Procurement	4367.0	230.3	225.6	2181.6	7004.5
MILCON	21.5	-	-	-	21.5
O&M	96.0	-	-	-	96.0
Total	5285.0	275.6	260.7	2292.5	8113.8

16c. (U) **Program Funding Summary (Cont'd)**:

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY76 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1969				1.2	0.8	0.8	0.8	4.7
1970				4.3	3.0	3.0	3.0	5.5
1971				4.6	3.4	3.4	3.4	5.1
1972				29.5	22.7	22.7	22.7	4.6
1973				22.8	18.6	18.6	18.6	4.4
1974				10.7	9.5	9.5	9.5	8.0
1975				16.7	16.1	16.1	16.1	10.9
1976				20.5	20.9	20.9	20.9	6.6
197T				3.1	3.3	3.3	3.3	2.9
1977				60.6	66.1	66.1	66.1	2.6
1978				106.3	124.9	124.9	124.9	6.8
1979				67.0	87.0	87.0	87.0	8.4
1980				113.9	163.4	163.4	163.4	10.6
1981				58.6	91.8	91.8	91.8	10.6
1982				39.6	65.3	65.3	65.3	7.6
1983				4.8	8.3	8.3	8.3	4.9
1984				0.8	1.4	1.4	1.4	3.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY76 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1985								3.4
1986				0.9	1.7	1.7	1.7	2.8
1987				1.0	1.9	1.9	1.9	2.7
1988				1.7	3.5	3.5	3.3	3.0
1989				0.9	1.9	1.9	1.9	4.2
1990				0.1	0.2	0.2	0.2	4.0
1991				7.3	16.6	16.6	15.9	4.3
1992				14.6	33.8	33.5	25.9	2.8
1993				14.5	34.4	10.4	0.4	2.4
1994				18.6	45.3			2.4
1995				14.1	35.1			2.3
1996				14.8	37.6			2.3
1997				11.0	28.6			2.2
1998				10.9	28.9			2.2
1999				5.8	15.8			2.2
2000								
Subtot	5			681.2	991.8	776.2	757.7	

16c. (U) Program Funding Summary (Cont'd):
RDT&E,N excludes costs for Penguin missile, SRQ-4 and SQQ-28.
Includes 5 aircraft and 3 ship systems which were incrementally funded with no annual procurement quantities identified.

Appropriation: 1506 Aircraft Procurement, Navy

1981				58.8	107.6	107.6	104.4	11.6
1982	18	41.0	274.5	354.8	705.1	705.1	703.9	14.3
1983	27	8.7	147.9	347.6	734.9	734.9	734.9	9.0
1984	21		103.1	223.8	492.2	492.2	491.4	8.0
1985	24	8.0	120.8	179.2	405.5	405.5	405.5	3.4
1986	18	3.5	83.8	113.6	264.9	264.9	254.3	2.8
1987	17	0.8	74.2	93.8	226.3	226.3	214.4	2.7
1988	6	0.9	33.1	51.4	129.4	129.4	122.0	3.0
1989	6	0.6	30.8	42.1	110.3	110.3	102.2	4.2
1990	6	10.3	38.2	73.7	199.6	199.6	167.5	4.0
1991	6	3.4	40.5	64.3	179.3	158.5	103.0	4.3
1992	13	3.9	74.8	95.4	272.3	243.0	80.1	2.8
1993	12	2.0	60.1	82.9	242.1	89.3	14.1	2.4
1994	7	7.2	49.2	75.5	225.7			2.4
1995	7	5.0	45.1	68.4	208.9			2.3
1996	7	3.6	45.1	70.5	220.1			2.3
1997	7	3.7	57.3	79.2	252.7			2.3
1998	17	20.8	108.6	145.9	476.0			2.2
1999	17		110.2	117.9	392.9			2.2
2000	17		124.6	136.3	464.3			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY76 Dollars Nonrec	Flyaway FY76 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
2001	7		51.8	63.6	221.5			2.2
2002				11.9	42.4			2.2
2003				12.0	43.8			2.2
Subtot	260	123.4	1673.7	2562.6	6617.8	3866.6	3497.7	
Appropriation: 1810 Other Procurement, Navy								
1982				16.7	29.5	29.5	29.5	7.6
1983				27.0	49.4	49.4	49.4	4.9
1984				23.0	43.3	43.3	43.3	3.8
1985				22.6	43.8	43.8	41.7	3.4
1986				16.8	33.7	33.7	31.8	2.8
1987				11.1	23.1	23.1	19.4	2.7
1988				10.1	22.0	22.0	21.2	3.0
1989				3.5	7.9	7.9	7.2	4.2
1990				5.6	13.1	13.1	4.6	4.0
1991				6.4	15.3	5.4	0.8	4.3
1992				1.7	4.2			2.8
1993				4.9	12.2			2.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY76 Dollars Nonrec	Flyaway FY76 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1994				1.8	4.6			2.4
1995				6.4	16.7			2.3
1996				4.1	11.0			2.3
1997				12.0	32.7			2.2
1998				8.6	23.9			2.2
1999				0.1	0.3			2.2
Subtot				182.4	386.7	271.2	248.9	
Appropriation: 1205 Military Construction, Navy								
1982				7.2	12.5	12.5	12.5	7.6
1983				5.0	9.0	9.0	9.0	4.9
Subtot				12.2	21.5	21.5	21.5	

MILCON excludes costs for SRQ-4 and SQQ-28.

Appropriation: 1804 Operation and Maintenance, Navy

1985				4.3	8.1			3.4
1986				3.1	6.0			2.8
1987				16.7	33.6			2.7

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY76 Dollars Nonrec	Flyaway FY76 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1804 Operation and Maintenance, Navy (Cont'd)								
1988				1.4	2.9			3.0
1989				7.2	15.6			4.2
1990				13.2	29.8			4.0
Subtot				45.9	96.0			
Grand Total	265	123.4	1673.7	3484.3	8113.8	4935.5	4525.8	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

A Defense Review Board (DRB) decision set the maximum SH-60B and SH-60F combined procurement quantity at 24 aircraft per year.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	159.3	230.3	564.1	-71.0	+333.8
Procurement Qty	7	7	28	0	+21
Proc. Unit Cost	22.757	32.900	20.146	-10.143	-12.754
FY 1995					
Procurement Cost	163.5	225.6	578.0	-62.1	+352.4
Procurement Qty	7	7	28	0	+21
Proc. Unit Cost	23.357	32.229	20.643	-8.872	-11.586
Balance of Proc. (FY 1996 to Complete)	2449.6	2181.6	1796.9	+268.0	-384.7

Minimum sustaining based on procurement profile of 7 SH-60B's, 7 SH-60F's and 4 HH-60H's. Maximum economic based on procurement profile of 28 SH-60B's, 28 SH-60F's and 4 HH-60H's.

Costs for minimum sustaining and maximum economic represent recurring flyaway only, whereas current estimate includes non-recurring, support costs, advances, advance credits and spares.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	5/5
Procurement	145/145

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 260 - @ Peak Rate: 5/mo			
FY 76 Base-Year $	4.4	6.8	0.0
Then Year $	7.6	18.4	0.0
@ Qty 0 (1st three years) - @ Peak Rate: 0/mo			
FY 76 Base-Year $	0.0	0.0	0.0
Then Year $	0.0	0.0	0.0

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

SH-60B operating and support costs are calculated based on a squadron consisting of thirteen aircraft with each aircraft flying 51.9 hours per month.

There is no antecedent system.

b. (U) Costs -- (FY 1976 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SH-60B SQUADRON	Avg Annual Cost Per N/A
Personnel	6.3	N/A
O&S Consumables	1.4	N/A
Direct Depot Maintenance	2.3	N/A
Sustaining Investment	0.8	N/A
Indirect Costs	0.2	N/A
Total	11.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	14.9	1.7	0.5	---	17.1
NIF	0.6	---	---	---	0.6
Total	15.5	1.7	0.5	---	17.7

Narrative Explanation:
Contractor Logistics Support (O&M,N) - FY 94 Increase - Premium time on new device.

18c. (U) Operating and Support Costs (Cont'd):
Other:
CETS (O&M,N) - FY 93/94 Decrease - Inflation and realignment of CETS support to organic NCTS support.

AF-14 IR MAVERICK

*** UNCLASSIFIED ***

93-792

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: IR MAVERICK

AS OF DATE: December 31, 1992

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
AGM-65 D/G IR Maverick

2. DoD Component: USAF

3. Responsible Office and Telephone Number:
ARMAMENT DIVISION
COMMODITIES DIRECTORATE
HILL AFB, UT 84056-5819
GM-15 RAMONA J. ALLISON
Assigned: October 1, 1991
AV 458-5432 COMM (801) 777-5432

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0604608F
PROCUREMENT:
APPN 3020 ICN M65DAG (Air Force)

OASD(PA) DFOISR 93-C-406

5. Related Programs:
IR GBU-15 (V)/B Cruciform Wing Weapon, F-4D/E, A-7D, A-10A, F-16, F-15E, F-4G, Navy IR Maverick (AGM-65F), SLAM (AGM-84E)

6. Mission and Description:
The AGM-65D is an air-to-surface imaging infrared guided missile for tactical aircraft, used against a broad spectrum of armor and ground targets. The Maverick is effective for day, night, and adverse weather operations. There are three different versions of the Maverick: AGM-65D (125 lb warhead), AGM-65G (300 lb warhead), and

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6. Mission and Description (Cont'd):

the Navy version AGM-65F (300 lb warhead). The Maverick does not replace any current system.

7. Program Highlights:

a. Significant Historical Developments --

The Preliminary Design Review was in June 1979 and the Critical Design Review was conducted in June 1980. Developmental Test and Evaluation/Initial Operational Test and Evaluation (DT&E/IOT&E) for the AGM-65D was conducted from late 1980 to August 1982 and consisted of 334 captive flight missions and 20 direct hits of 26 actual launches. AFOTEC IOT&E reported Operational Suitability as deficient at the 1982 AFSARC/OSD review. OSD directed the production of 200 missiles with FY82 funds and subsequently approved the FY83 buy of 900 missiles during the April 1983 review; the missile's reliability had shown favorable improvements.

The AGM-65D Final Operational Test and Evaluation (FOT&E) was conducted from 1984 to 1985 and consisted of over 432 captive carry hours and 42 launches from various tactical systems at an array of targets. The AGM-65G flight test program was completed in 1988 with four out of five direct hits.

After completing AGM-65D qualification tests, Raytheon was awarded the production option for 800 missiles that were delivered on schedule between May 87 and Nov 88. The Qualification Test and Evaluation (QT&E) results were 8 of 10 hits and was completed on 5 Dec 1985. Qualification Operational Test and Evaluation (QOT&E) of the AGM-65G was completed in 1990 and resulted in 9 of 10 successful launches and direct hits on targets.

Initial Operation Capability (IOC) was attained in Feb 86, followed by a Mar 86 DSARC review that gave the Maverick program a decision for full production.

The Department of Defense reduced the procurement program from 60,664 weapons through FY97 to 23,496 weapons through FY92.

The FY91 Amended President's Budget eliminated IR Maverick procurement for FY91 and FY92. This, along with small adjustments to the FY88 and FY90 procurement programs, resulted in total USAF Maverick production of 19,659.

The FY92 Supplement provided for FY91 buy of 5,255 missiles to replace assets fired in Desert Storm.

7b. Program Highlights (Cont'd):

b. Significant Developments Since Last Report -- As of 31 Dec 92, delivery quantities are as follows:

	AGM-65D	AGM-65G	TGM (D/G)	GCS (Spares)
Hughes	9560	3909	773/61	527
Raytheon	5218	0	0/0	161

NOTE: TGM-Training Guided Missiles; GCS-Guidance and Control Section

The FY93 President's Budget withdrew the funding for the 600 Maverick missiles added in FY91. This results in a total Maverick production of 24,914 missiles. Since the program is now over 90 percent expended this will be the final SAR.

The Maverick program is more than 90 percent complete in expenditures this is the final SAR.

IR Maverick continues to satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There is a schedule breach, Last Delivery (FOC), of seven months (APR 94 to NOV 94) to the Acquisition Program Baseline (APB), dated 16 Sep 91. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
DSARC II (JRMB)	SEP 76	SEP 76	SEP 76
Eng Dev Contract Award	APR 77	OCT 78	OCT 78
DT&E/IOT&E Flight Tests Start	NOV 78	JUN 80	JUN 80
Demonstration Milestone	MAY 79	N/A	
DSARC IIIA (JRMB)(Pilot Production)(Partial Release)	JUN 79	MAR 82	MAR 82
Complete DT&E/IOT&E	JAN 80	AUG 82	AUG 82
DSARC IIIB (JRMB)(Pilot Production Full Go-Ahead)	MAR 80	SEP 82	SEP 82
Initial Operational Capability	JUN 81	FEB 86	FEB 86
OSD Review (Rel/Maint Review)	N/A	APR 83	APR 83
OSD Review (Full Production Go-Ahead)	N/A	MAR 86	MAR 86
Last Delivery (FOC)	N/A	APR 94	NOV 94(Ch-1)

9b. Schedule (Cont'd):

b. Previous Change Explanations --

A budget cut of $16.2M in FY78 RDT&E funds, Congressional action to delete all FY78 funds, and additional IR centroid tracker advanced development and testing caused the following schedule milestone changes: Engineering Development Contract Award to Oct 78, DT&E/IOT&E Flight Test Start Date to Apr 79, Demonstration Milestones to Dec 80, and DSARC IIIA to Jan 81, DT&E/IOT&E Complete to Jul 81, and IOC to Mar 83.

Late missile deliveries impacted DT&E completion; unusually warm weather in winter 81 delayed winter site tests for one year. Based on a revised DT&E/IOT&E completion forecast date of Mar 82, Production Decision Milestones were restructured to allow a pilot production start decision in Jan 82 and a follow-on full scale pilot production decision in May 82.

Demonstration Milestones were deleted when the DSARC III (JRMB) milestone was created. Further, the need for the DSARC III milestone was satisfied by holding DSARC IIIA (2 Mar 82) and DSARC IIIB (21 Sep 82). Limited test resources further delayed DT&E/IOT&E completion until Aug 82.

IOC similarly slipped with the delays in DT&E/IOT&E. A plant shutdown to review quality assurance caused hardware delivery delays and thus further moved IOC out from Apr 85 to Sep 85 and then again to Feb 86.

The Reliability and Maintainability Review was held in Apr 83. A decision of this review was that the next one should not occur until FOT&E completion. Because of the delays previously mentioned, full production go-ahead slipped from Aug 85 to Mar 86.

Last Delivery/Full Operational Capability was added as a major milestone that has been established since the 31 Dec 90 SAR. Milestone date has slipped from Nov 92 in the APB to Nov 93.

Date of Last Delivery/Full Operational Capability (FOC) changed in the APB from Dec 92 to Apr 94 as the result of a directed FY91 Supplemental buy of 5,255 missiles. The milestone date slipped to Aug 94 due to a four month stop work order on the FY91 contract. The stop work order was issued because of two protests being filed with the GAO by the losing contractor. Both protests were denied and the stop work order was rescinded on 13 Nov 1991.

9c. Schedule (Cont'd):

c. Current Change Explanations --

(Ch-1) Date of Last Delivery/FOC was changed from AUG 94 to NOV 94 to reflect a three month slip due to Raytheon Company incorporating an Engineering Change into the production baseline.

d. References --

Development Estimate:
DCP 154, dated September 20, 1976, subject "Imaging Infrared Maverick Missile System".

Approved Program:
AFAE Approved Acquisition Program Baseline dated 21 November 1991.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Minimum Trackable Temp. (MTT) (Delta)					
1/4 milliradian (mr) max target	10	10	/ 10	1.64	1.64
1/2 milliradian (mr) target	2.5	2.5	/ 2.5	.40	.40
Minimum Resolvable Temp. (MRT) (Delta)					
1.5 degrees field of view	.77	.77	/ .77	.77	.77
3.0 degrees field of view	N/A	.77	/ .77	.77	.77
Minimum Launch Range (ft) (0.2 Mach, 15 degree offset)	2500	4000	/ 4000	3500	3500
Maximum Launch Range (ft) (1.2 Mach, 0 degree offset)	85000	65000	/ 65000	73000	73000
Launch Range (ft) (exercised tank target, forward hemisphere 5KM visibility, 400 ft/nm, Abs humidity, night)	22000-30000	22000	/ 22000	22300	22300
Probability of Hit	.87	.75	/ .75	.85	.87

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mission Success Probability	.80	.80	/ .69	.83	.80
Incoming Reliability (missile)	N/A	.95	/ .95	.97	.97
Guidance Section Mean Time Between Failure (hrs)	N/A	36	/ 36	137	137
Boresight Accuracy (mr)	4.0	N/A	/ N/A	4.0	4.0
Lockdown Offset (degrees below LOS)	15	N/A	/ N/A	15	15

b. Previous Change Explanations --

Change in the Demonstrated Performance of Mission Success Probability from .77 to .83 reflects cumulative results through completion of FOT&E.

Change in the Current Estimate of Probability of Hit from .86 to .87 is attributable to FOT&E results.

Minimum Trackable Temperature (MTT)(Delta) for 1/4 milliradian (mr) target changed from 3.5 to 1.64. Minimum Trackable Temperature (MTT) (Delta) for 1/2 mr target changed from 1.6 to .40. Both parameters changed because the seeker demonstrated capabilities exceeding the performance parameters previously reported.

The units of measurement for Minimum Resolvable Temperature (MRT) (Delta) were changed from 1/4 mr spatial half period to 1.5 degrees field of view and 3.0 degrees field of view for ease of comprehension.

Change in the current estimate for Minimum Launch Range (ft) (0.2 Mach, 15 degree offset) reflects updated data from FOT&E.

Maximum Launch Range, (ft) (1.2 Mach, 0 degree offset) current estimate changed from 85,000 to 73,000 due to updated data from FOT&E.

Lockdown Offset (Degrees below LOS) was deleted from the Acquisition Program Baseline (APB); however, it is considered an important performance indicator and will be tracked by the Program Office.

10b. Performance Characteristics (Cont'd):
Launch Range (ft)(exercised tank target, forward hemisphere 5KM visibility, 400 ft/nm Abs humidity, Night) changed from 30,000 to 22,300 due to updated data from FDT&E.

Incoming Reliability (missile) and Guidance Section Mean Time Between Failure (hours) parameters were added to the APB.

Incoming Reliability (missile) changed from .995 to .97 to reflect actuals. Source: Weapon System Effectiveness Report.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
DCP 154, dated September 20, 1976, subject "Imaging Infrared Maverick Missile System".

Approved Program:
AFAE Approved Acquisition Program Baseline dated 21 November 1991.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

s. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	100.0	106.7	106.7
Procurement	895.1	1197.4	1161.8
Total Flyaway	(792.1)		(1019.9)
Total Other Weapon System			(68.0)
Peculiar Support	(99.1)		(57.8)
Initial Spares	(3.9)		(16.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	995.1	1304.1	1268.5
Escalation	597.8	1921.9	1833.3
Development (RDT&E)	(34.4)	(61.3)	(61.3)
Procurement	(563.4)	(1860.6)	(1772.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1592.9	3226.0	3101.8

NOTE: Peculiar Support includes $57.8 million in recurring flyaway for 891 training missiles.

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	N/A	0
Procurement	31078	24914	24914
Total	31078	24914	24914

Note: Excludes 35 RDTE prototypes from the SAR Baseline and 33 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs --

BAHRAIN:
25 AGM-65D missiles, 3 TGM-65D missiles, and related support equipment for a total cost of $7.9 million.
40 AGM-65G missiles and containers for a total cost of $4.7 million (supplied from the Special Defense Acquisition Fund (SDAF)).

DENMARK:
150 AGM-65G missiles, 4 TGM-65 missiles, and related support equipment for a total of $18.6 million (SDAF).

EGYPT:
144 AGM-65D missiles, 16 TGM-65D missiles, and related support equipment for a total of $24.4 million.
50 AGM-65G missiles and containers for a total of $5.6 million (SDAF).

INDONESIA:
16 AGM-65G missiles, 8 TGM-65G missiles, and related support equipment for $3.6 million (SDAF).

KOREA:
96 AGM-65G missiles, 6 TGM-65G missiles, and related support equipment for $13.0 million (SDAF).

KUWAIT:
300 AGM-65G missiles, 10 TGM-65G missiles, and related support equipment for a total of $50.4 million.

NEW ZEALAND:
20 AGM-65G missiles, 6 TGM-65G missiles, and related support equipment for a total of $2.8 million (SDAF).

PORTUGAL:
5 AGM-65D missiles, 2 TGM-65D missiles, and related support equipment to the Government of Portugal for a total of $1.3 million.

11c. Total Program Cost and Quantity (Cont'd):

SINGAPORE:
2 AGM-65G missiles and 2 TGM-65G missiles to the Government of Singapore for a total of $0.5 million (SDAF).
100 AGM-65G missiles, 4 TGM-65G missiles, and related support equipment for a total of $12.9 million (SDAF).
2 AGM-65G missiles and containers for a total of $.2 million.

SPAIN:
250 AGM-65G missiles, 16 TGM-65G missiles, and related support equipment for a total of $36.2 million.

SWITZERLAND:
3 AGM-65D missiles, 5 AGM-65G missiles, and containers for a total of $1.2 million.

THAILAND:
25 AGM-65D missiles, 5 TGM-65G missiles, and related support equipment for a total of $3.4 million.

TURKEY:
26 AGM-65G missiles, 10 TGM-65G missiles, and related support equipment for a total of $4.8 million (SDAF).

d. Nuclear Costs -- None.

e. References --

Development Estimate:
DCP 154, dated September 20,1976, subject "Imaging Infrared Maverick Missile System".

Approved Program:
AFAE Approved Acquisition Program Baseline dated 21 November 1991.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3101.8	3160.6	3101.8
(2) Quantity	24914	25514	24914
(3) Unit Cost	0.125	0.124	0.125

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TYS)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	N/A
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	134.4	1458.5	0.0	1592.9
Previous Changes:				
Economic	+10.4	-165.7	-	-155.3
Quantity	-1.1	-346.4	-	-347.5
Schedule	+18.6	+1853.6	-	+1872.2
Engineering	-	+32.0	-	+32.0
Estimating	-0.2	+17.3	-	+17.1
Other	-	-	-	-
Support	+5.9	+143.3	-	+149.2
Subtotal	+33.6	+1534.1	-	+1567.7
Current Changes:				
Economic	-	+12.9	-	+12.9
Quantity	-	-43.2	-	-43.2
Schedule	-	+251.7	-	+251.7
Engineering	-	+4.3	-	+4.3
Estimating	-	-280.4	-	-280.4
Other	-	-	-	-
Support	-	-4.1	-	-4.1
Subtotal	-	-58.8	-	-58.8
Total Changes	+33.6	+1475.3	-	+1508.9
Current Estimate	168.0	2933.8	-	3101.8

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	100.0	895.1	0.0	995.1
Previous Changes:				
Quantity	-0.7	-90.7	-	-91.4
Schedule	+6.4	+276.4	-	+282.8
Engineering	-	+12.0	-	+12.0
Estimating	-2.5	+46.5	-	+44.0
Other	-	-	-	-
Support	+3.5	+40.3	-	+43.8
Subtotal	+6.7	+284.5	-	+291.2
Current Changes:				
Quantity	-	-14.4	-	-14.4
Schedule	-	+71.0	-	+71.0
Engineering	-	+3.1	-	+3.1
Estimating	-	-75.9	-	-75.9
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	-	-17.8	-	-17.8
Total Changes	+6.7	+266.7	-	+273.4
Current Estimate	106.7	1161.8	-	1268.5

b. Previous Change Explanations --

RDT&E

Economic: Revised Economic Escalation indices.

Quantity: RDT&E change from 35 to missiles 33.

Schedule: Budget changes, cancellation of FY78 funds.

Estimating: Definitization of FSD Contract, restoration of IR test and second source, prior year inflation adjustment, prior year program amounts aligned to actual obligations, and completion of Rapid Fire II effort.

Support: Addition of initial support items.

13b. Cost Variance Analysis (Cont'd):

Procurement	
Economic:	Revised Economic Escalation Indices.
Quantity:	Procurement change from 60,664 to 23,496 missiles. Procurement change from 23,496 to 19,733 missles. Procurement change from 19,733 to 20,259 missiles. Procurement change from 20,259 to 25,514 missiles.
Schedule:	Budget changes, cancellation of FY78 funds, realignment and reduction of buy quantites, production start changed from FY81 to FY82, loss in production efficiency due to rescheduling units to FY90, program schedule extended due to amendments to FY85 PB, procurement delay due to out-year budget cuts, created a four year extension to the program. Increase in buy quantities due to procurement of additional 230 missiles with FY88 funds. Revised annual buy quantities in FY88 and FY90. Revised annual buy quantities in FY91 by 5,255 missiles.
Engineering:	Engineering change on 1800 units to modify them to AGM-65Gs, addition of VECP 718, rate of acceleration meter (ROAM) resulted in savings in hardware costs. Reduced engineering costs associated with reduction of 3763 missiles. Adjusted engineering costs associated with incorporation of VECP 638.
Estimating:	Revised estimate from definitization of Segment I and from DSARC III ICA, recategorization of containers from Support to Flyaway, and 300 unit increase in Raytheon pilot production for FY86. Estimate updated using contract data and Hughes productivity plan, adjustment for prior year escalation, one-time change resulting from correction to methodology for computing inflation on advance procurement funding, cost impact to unit prices and fixed costs caused by schedule delays and budgeting reductions. Re-estimates based on changing acquisition strategies i.e., split annual buys vs single source multiyear. Revised estimate for current and prior year inflation offset. Incorporation of competitive price data resulting in revised estimate. Corrections to prior year SAR by refining and recategorizing flyaway costs to support costs in prior years. Revised estimating cost associated with all program changes. Estimating changes associated with revised buy quantities and program changes.
Support:	Deletion of FDT, addition of initial spares and

13b. Cost Variance Analysis (Cont'd):

support items, recategorization of containers from Support to Flyaway, Plant 44 environmental clean-up, reduction of initial spares due to funding cuts and quantity reductions. Estimate updates based on contract data, additional peculiar support equipment for missile inventory build-up in FY88, additional data for second source, change in reporting of initial spares requirements to include replenishment spares, additional data needed due to extension of the program, inpact of prior year inflation adjustment and spares schedule changes. Adjustment and refinement of flyaway costs in prior years. Recategorization of outyear funds to provide for costs associated with close-out of the program. Revised support and spares associated with revised quantities.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised economic escalation indices. (Economic)	N/A	-4.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+16.9
Total Variance associated with decrease of 600 units.	+71.6	+215.1
Quantity Variance resulting from decrease of 600 units. (Quantity)	-14.4	-43.2
Schedule Variance associated with quantity decrease. (Schedule)	+71.0	+251.7
Engineering Variance associated with quantity decrease. (Engineering)	+3.1	+4.3
Estimating Variance associated with quantity decrease. (Estimating)	+11.9	+2.3
Adjustment for Current & Prior Inflation. (Estimating)	+1.5	-13.1
Revised estimating change associated with quantity decrease. (Estimating)	-89.3	-269.6
Adjustment for Current & Prior Inflation. (Support)	+0.1	+0.3
Revised estimating for Intial Spares requirement. (Support)	-1.4	-4.2

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Economic adjustment for negative change. (Support)	-0.3	-0.2
Procurement Subtotal	-17.8	-58.8

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.051	-0.006	-0.001	0.085	0.001	-0.011	--	0.006	0.074	0.125

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

HUGHES SEGMENT IX:
HUGHES GEORGIA, INC, LaGRANGE, GA
F33657-90-C-0020, FFP
Award: May 31, 1990
Definitized: May 11, 1990

Initial Contract Price		
Target	Ceiling	Qty
$194.0	N/A	2196

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$211.2	N/A	2196	$211.2	$211.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$	$
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract price increased by $3.1M to include the addition of value engineering changes, weapon system support costs, and award fees. Contract price includes $17.0M in FMS funds, $42.9M in Navy funds, and $2.4M of SDAF funds.

Cost and Schedule variances are not required on this FFP contract.

This contract's deliveries are over 90% complete.

15. Contract Information (Cont'd):

RAYTHEON SEGMENT V:	Initial Contract Price		
	Target	Ceiling	Qty
Raytheon Company, Bristol, TN F33657-91-C-0044, FFP Award: July 1, 1991 Definitized: July 17, 1991	$264.8	N/A	5255

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$266.7	N/A	5255	$266.7	$266.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$	$
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract price increased by $1.9M due to implementation of Engineering Change Proposal RMAV-37A1.

Contract price includes $2.2M in Navy funds.

Cost and Schedule variances are not required on this FFP contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 100.0% (18 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 100.0% ($3101.8 / $3101.8)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY75-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	168.0	-	-	-	168.0
Procurement	2933.8	-	-	-	2933.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3101.8	-	-	-	3101.8

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1975			3.6	3.6	3.9	3.9	3.9	9.6
1976			3.7	3.7	4.3	4.3	4.3	9.6
197T								
1977			8.2	8.2	10.2	10.2	10.2	9.9
1978								7.4
1979			29.8	29.8	43.4	43.4	43.4	8.4
1980			30.6	30.6	49.5	49.5	49.5	9.4
1981			21.9	21.9	39.3	39.3	39.3	11.9
1982			6.1	6.1	11.6	11.6	11.6	9.4

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1983			2.0	2.0	4.1	4.1	4.1	4.9
1984			0.8	0.8	1.7	1.7	1.7	3.8
Subtot			106.7	106.7	168.0	168.0	168.0	
Appropriation: 3020 Missile Procurement, Air Force								
1982	200	14.3	60.9	103.4	218.2	218.2	215.7	9.6
1983	900	30.3	58.5	110.1	246.1	246.1	239.3	9.0
1984	1980	6.5	99.2	128.7	300.1	300.1	299.2	8.0
1985	2600	0.4	123.4	157.0	376.7	376.7	376.7	3.4
1986	2837	8.0	142.7	165.5	415.5	415.5	415.5	2.8
1987	3224		133.4	139.0	358.5	358.5	355.7	2.7
1988	3299		104.8	108.2	292.9	292.9	292.3	3.0
1989	2540	2.1	82.6	91.5	256.1	256.1	240.9	4.2
1990	2079		47.0	48.9	140.8	136.1	130.9	4.0
1991	5255		105.8	108.2	325.0	286.4	96.6	4.3
1992				1.3	3.9	1.6	1.6	2.8
Subtot	24914	61.6	958.3	1161.8	2933.8	2888.2	2664.4	
Grand								

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
Total	24914	61.6	1065.0	1268.5	3101.8	3056.2	2832.4	

17. Production Rate Data:

a. Production Baseline Rate

Full rate production quantity was planned to be 12000 missiles per year; this was never achieved.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

Note: FY91 was the last buy year.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	33/33
Procurement	19498/19371

17d. Production Rate Data (Cont'd):

d. Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 14740 - @ Peak Rate: 500.0/mo			
FY 75 Base-Year $	0.032	0.045	0.032
Then Year $	0.050	0.112	0.050
@ Qty 380 (1st three years) - @ Peak Rate: 230.0/mo			
FY 75 Base-Year $	0.036	0.054	0.032
Then Year $	0.048	0.121	0.050

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The IR Maverick D & G model missiles are supported by a two-level maintenance concept. The O&S costs collected were those required to operate, support, and maintain the AGM-65 D&G models of Maverick missiles fully. This included the O&S costs of both the Tactical Guided Missile (AGM) & Training Guided Missile (TGM). O&S costs included organizational level inspection of the All-Up-Round. It included fault isolation to the Shop Replaceable Unit (SRU) and separation of the failed SRU at the Organizational Maintenance Facility. The O&S costs also included depot repair of the SRU; transportation to and from the depot level/organization; organizational and depot training; maintenance of organizational and depot support equipment; management of new parts entered into the support system; maintenance and reproduction of technical orders; maintenance of real property; maintenance/update of embedded software; and replenishment spares and consumables. These costs were obtained on 17 Dec 91 using the Maverick Cost-of-Ownership model.

There is no antecedent system.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 20 years	Avg Annual Cost Per Antecedent
Personnel	2.9	N/A
Organization Support	1.5	N/A
Depot Maintenance	4.0	N/A
Depot Supply	2.3	N/A
Transportation	0.0	N/A
Training	0.0	N/A
Sustaining Investment	2.4	N/A
Total	13.1	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
OSM	2.8	---	---	---	2.8
Industrial Fund	0.3	---	---	---	0.3
Total	3.1	---	---	---	3.1

N-27 MK 48 ADCAP

92-134

[redacted]

SECRET

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MK 48 ADCAP (MYP)

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 27 1993
2

1. (U) Designation and Nomenclature (Preferred Name): MK 48 ADCAP (MYP)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

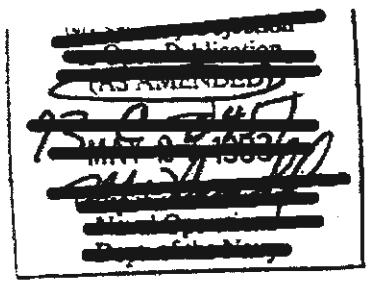
TORPEDO MK 48 ADCAP WEAPON SYSTEMS
PROGRAM PEO
UNDERSEA WARFARE
WASHINGTON, DC 20361-5103

CAPT. D. [redacted]
Assigned: [redacted]
AV 332-0616 COMM (202) 602-0616

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 63691N Project V0366
PROCUREMENT:
APPN 1507 ICN 311100 (Navy)
MILCON:
PE 242896N



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OASD(PA) DFOISR 93-S-713

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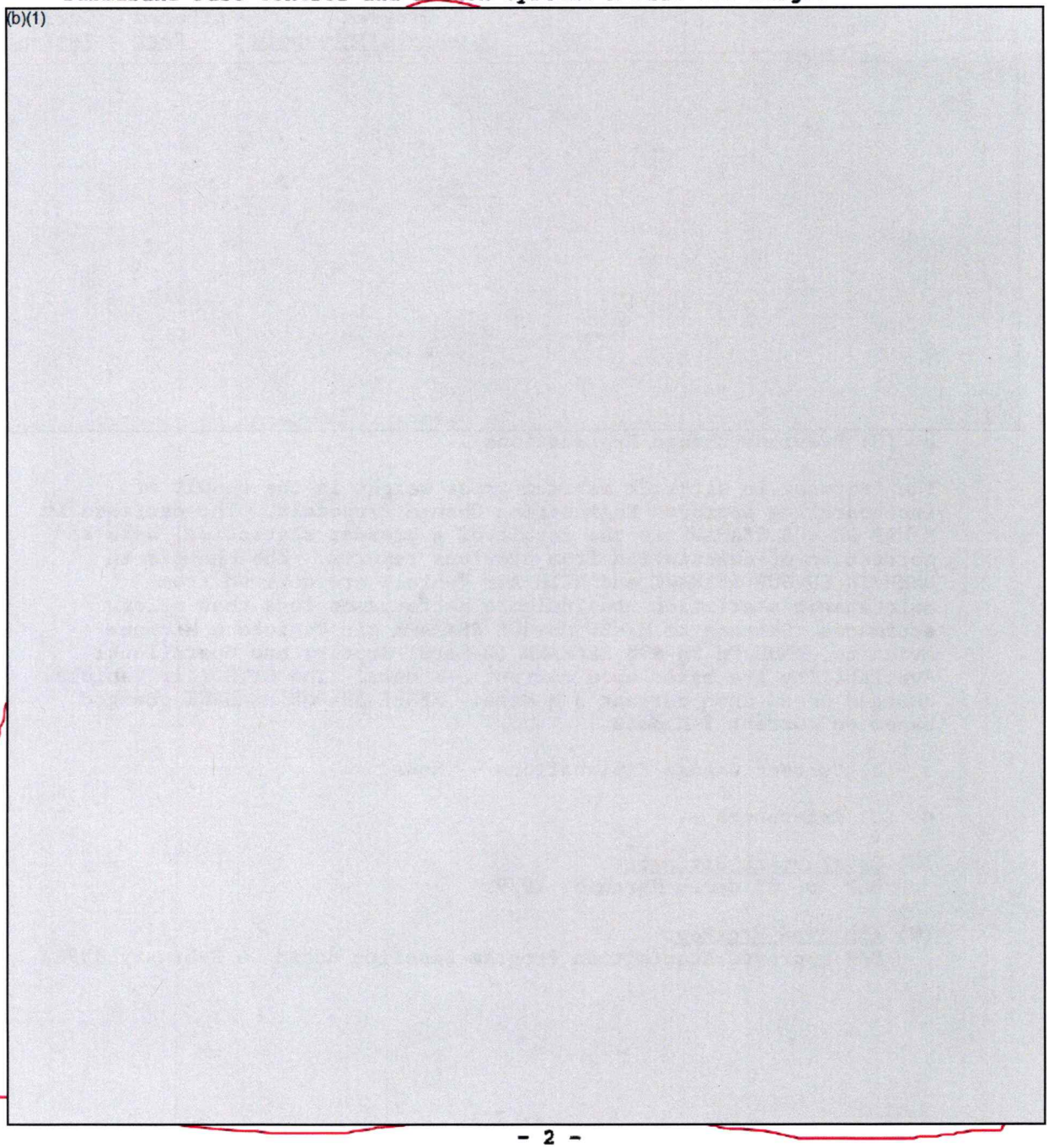
5. (U) **Related Programs:**
Submarine Fire Control and Launch Systems Mobile ASW Target

(b)(1)



7a. (U) Program Highlights (Cont'd):

(b)(1)

[redacted]

c. (U) Changes Since As Of Date --
In January of 1993 ASN conducted a Milestone IV (major modification) Navy Program Decision Meeting (NPDM) for the ADCAP program. The ADCAP Mods program was approved as an ACAT II program. The Mods program addresses specific deficiencies in ADCAP radiated noise levels and provides the necessary hardware improvements required to address shallow water performance improvements anticipated by the MK48 ADCAP software block upgrades. A formal Cost and Operational Effectiveness Analysis (COEA) supported the conclusion of the Milestone process.

8. (U) Threshold Breaches:
There are no breaches to the approved Acquistion Program Baseline (APB) dated 15 January 1993. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

(b)(1)

[redacted]

	Production Estimate	Approved Program	Current Estimate
(b)(1)	[redacted]		

9a. (U) **Schedule (Cont'd)**:

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
DNSARC II	SEP 82	SEP 82	SEP 82
Critical Design Review	AUG 84	AUG 84	AUG 84
LRIP Contract Award	MAR 85	MAR 85	MAR 85
Milestone IIIA	SEP 85	SEP 85	SEP 85
Milestone IIIB	SEP 87	SEP 87	SEP 87
OPEVAL Completion	MAY 88	MAY 88	MAY 88
IOC	AUG 88	AUG 88	AUG 88
Milestone IIIC (AFP)	JAN 89	JAN 89	JAN 89
Milestone IV	N/A	JAN 93	JAN 93

Footnote: 1/ IOC is defined as the initial delivery of L1 production contract MK 48 ADCAP Warshot Torpedoes for loadout under type commander (TYCOM).

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
NDCP Rev. 2, dated 6 Sep 88, subject 'Navy Decision Coordinating Paper (NDCP) for Torpedo MK 48 ADCAP Program.' DAE Program Baseline dated 14 Jul 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 15 January 1993.

10. (U) **Performance Characteristics**:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) **Performance Characteristics (Cont'd):**

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

SOFTWARE:

(U) LATEST ESTIMATE IS BASED ON CURRENT OPERATIONAL SOFTWARE.

10a. (b)(1)

(b)(1)

b. (U) Previous Change Explanations --

(b)(1)

c. (U) Current Change Explanations --

(b)(1)

10d. (U) **Performance Characteristics (Cont'd)**:

d. (U) References --

(U) Production Estimate:
NDCP Rev. 2, dated 6 Sep 88, subject 'Navy Decision Coordinating Paper (NDCP) for Torpedo MK 48 ADCAP Program.' DAE Program Baseline dated 14 Jul 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 15 January 1993.

11. (U) **Total Program Cost and Quantity (Current Estimate in Millions of Dollars)**:

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	1312.1	1284.4	1285.0
Procurement	5019.6	2608.1	2616.1
Total Sailaway	(4309.8)		(2088.4)
Other Weapon Systems Cost	(599.1)		(430.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(110.7)		(97.2)
Construction (MILCON)	16.0	21.3	21.3
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	6347.7	3913.8	3922.4
Escalation	452.6	18.4	3.7
Development (RDT&E)	(-163.9)	(-163.3)	(-164.1)
Procurement	(615.9)	(180.5)	(166.6)
Construction (MILCON)	(0.6)	(1.2)	(1.2)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6800.3	3932.2	3926.1

(b)(1)

Note: Excludes 48 non-fully configured RDT&E units.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Production Estimate:
NDCP Rev. 2, dated 6 Sep 88, subject 'Navy Decision Coordinating Paper (NDCP) for Torpedo MK 48 ADCAP Program.' DAE Program Baseline dated 14 Jul 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 15 January 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

(b)(1)

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1148.2	5635.5	16.6	6800.3
Previous Changes:				
Economic	-2.0	+121.0	-0.1	+118.9
Quantity	-	-	-	-
Schedule	+53.4	+2743.3	+0.1	+2796.8
Engineering	-63.3	-634.5	-	-697.8
Estimating	+104.9	-257.5	+13.2	-139.4
Other	-	-	-	-
Support	-	+187.3	-	+187.3
Subtotal	+93.0	+2159.6	+13.2	+2265.8
Current Changes:				
Economic	-7.2	-172.7	-0.1	-180.0
Quantity	-	-3507.0	-	-3507.0
Schedule	-	-556.5	-	-556.5
Engineering	-100.9	+11.0	-	-89.9
Estimating	-12.2	-378.2	-7.2	-397.6
Other	-	-	-	-
Support	-	-409.0	-	-409.0
Subtotal	-120.3	-5012.4	-7.3	-5140.0
Total Changes	-27.3	-2852.8	+5.9	-2874.2
Current Estimate	1120.9	2782.7	22.5	3926.1

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1312.1	5019.6	16.0	6347.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	+43.5	+1051.5	-	+1095.0
Engineering	-56.3	-386.1	-	-442.4
Estimating	+78.1	-232.0	+10.9	-143.0
Other	-	-	-	-
Support	-	+107.6	-	+107.6
Subtotal	+65.3	+541.0	+10.9	+617.2
Current Changes:				
Quantity	-	-2128.0	-	-2128.0
Schedule	-	-315.3	-	-315.3
Engineering	-81.5	+9.1	-	-72.4
Estimating	-10.9	-220.3	-5.6	-236.8
Other	-	-	-	-
Support	-	-289.7	-	-289.7
Subtotal	-92.4	-2944.2	-5.6	-3042.2
Total Changes	-27.1	-2403.2	+5.3	-2425.0
Current Estimate	1285.0	2616.4	21.3	3922.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Escalation Rates

Schedule: CCAPS schedule slip, technical problems during CCAPS D&V phase

Engineering: Propulsion improvement system restructuring

Estimating: Budget Adjustments, new program starts for Warhead Lethality Improvements and OADEX, addition of FYDP funding for continuation of program through FY97, repricing, and inflation offset.

Procurement

Economic: Revised Economic Escalation Rates

Schedule: Program extension from reduced annual quantities

13b. (U) Cost Variance Analysis (Cont'd):

Engineering: Propulsion improvement program restructuring
Estimating: Sole source reduction, Multiyear Procurement reduction, sample proofing reduction, budget adjustments and inflation offset
Support: Revised spares requirements

MILCON
Economic: Revised Economic Escalation Rates
Schedule: Slip in magazine construction at NWS Yorktown
Estimating: Construction of automated material handling facility at NUWC, Keyport and magazines at Yorktown and New London, and offset for escalation

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-6.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	-1.2
Transition to Modification Program (Engineering)	-81.5	-100.9
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.4
Incorportation of POM 94 decision (Estimating)	-9.9	-11.6
Repricing adjustments (Estimating)	-5.8	-6.6
Inflation offset (Estimating)	+4.5	+5.6
RDT&E Subtotal	-92.4	-120.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-625.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+452.3
Total Variance associated with decrease of 1926 units.	-2443.3	-4063.5
Quantity Variance resulting from decrease of 1926 units. (Quantity)	-2128.0	-3507.0
Schedule Variance resulting from Quantity Allocation. (Schedule)	-315.3	-556.5
SECNAV increase for Mods Value Engineering (Engineering)	+9.1	+11.0

13c. (4) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for Current & Prior Inflation. (Estimating)	+9.1	+11.1
Torpedo Hardware Savings from award of FY92-94 multiyear (Estimating)	-105.1	-129.1
ILS Integrator Savings (Estimating)	-0.7	-0.9
CASS/DBOF reductions and other repricing adjustments (Estimating)	-3.2	-4.0
Reduction to reflect revised outyear inflation assumptions (PBD 604) (Estimating)	-3.5	-4.5
Adjustment for outyear inflation (Estimating)	-9.9	-11.6
Adjustment for prior year error in allocating support variance (Estimating)	-107.0	-239.2
Adjustment for Current & Prior Inflation. (Support)	+2.3	+3.0
Initial Spares reductions due to transition to Modification Program (Support)	-121.1	-203.4
Other Weapons Systems costs reductions due to transition to Modification Program (Support)	-170.9	-208.6
Procurement Subtotal	-2944.2	-5012.4
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	-0.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1
Post FY94 transition to Modification Program (Estimating)	-5.7	-7.3
MILCON Subtotal	-5.6	-7.3

14. (U) **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

(b)(1)

[redacted]

15. (U) **Contract Information** (Then-Year Dollars in Millions):

a. (U) Procurement --

(U) WPN PRIME (P4):
HUGHES AIRCRAFT CORP., FULLERTON, CA
N00024-90-C-6055, FFP
Award: January 31, 1990
Definitized: January 31, 1990

Initial Contract Price		
Target	Ceiling	Qty
$130.9	N/A	108

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$139.2	N/A	108	$139.2	$139.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) WPN PRIME (P5):
WESTINGHOUSE ELEC. CORP, CLEVELAND, OH
N00024-91-C-6104, FFP
Award: January 31, 1991
Definitized: January 31, 1991

Initial Contract Price		
Target	Ceiling	Qty
$122.7	N/A	119

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$124.6	N/A	119	$127.0	$127.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) WPN PRIME (P6-P8):
HUGHES AIRCRAFT CORP, FOREST, MS
N00024-92-C-6100, FFP
Award: May 7, 1992
Definitized: May 7, 1992

Initial Contract Price		
Target	Ceiling	Qty
$183.8	N/A	324

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$187.9	N/A	324	$187.9	$187.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) P4 TEST EQUIPMENT:
HUGHES AIRCRAFT CORP, FULLERTON, CA
N00024-90-C-6057, FFP
Award: March 13, 1990
Definitized: March 13, 1990

Initial Contract Price		
Target	Ceiling	Qty
$92.7	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$97.8	N/A	0	$97.8	$97.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) WPN PRIME (P5):	Initial Contract Price		
	Target	Ceiling	Qty
HUGHES AIRCRAFT CORP, FULLERTON, CA N00024-91-C-6103, FFP Award: January 31, 1991 Definitized: January 31, 1991	$110.3	N/A	121

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$124.4	N/A	121	$124.4	$124.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 93.8% (15 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 96.7% ($3795.6 / $3926.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY79-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	1093.7	27.2	-	-	1120.9
Procurement	2679.4	103.3	-	-	2782.7
MILCON	22.5	-	-	-	22.5
O&M	-	-	-	-	-
Total	3795.6	130.5	-	-	3926.1

16c. (U) **Program Funding Summary (Cont'd):**

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1979				28.3	17.9	17.9	17.9	8.4
1980				75.2	52.6	52.6	52.6	10.6
1981				118.7	90.6	90.6	90.6	10.6
1982				192.2	154.4	154.4	154.4	7.6
1983				214.9	180.4	180.4	180.4	4.9
1984				198.8	172.9	172.9	172.1	3.8
1985				140.0	125.5	125.5	125.5	3.4
1986				65.4	60.3	60.3	60.1	2.8
1987				59.5	56.5	56.4	56.4	2.7
1988				20.6	20.2	20.1	16.9	3.0
1989				25.6	26.2	26.2	23.3	4.2
1990				31.9	34.0	33.9	33.9	4.0
1991				51.4	56.7	56.7	55.9	4.3
1992				13.0	14.7	14.6	11.3	2.8
1993				26.6	30.8	18.9	3.6	2.4
1994				22.9	27.2			2.4
1995								2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1996								2.3
1997								2.2
1998								2.2
1999								2.2
Subtot				1285.0	1120.9	1081.4	1054.9	
Appropriation: 1507 Weapons Procurement, Navy								
1984				23.3	20.9	20.9	20.9	8.0
1985	28	15.8	78.5	123.0	113.5	113.4	112.9	3.4
1986	123	86.6	235.1	381.0	363.9	362.1	349.6	2.8
1987	50	49.8	113.3	250.4	247.8	247.6	223.7	2.7
1988	102	19.0	191.2	248.7	255.7	253.2	224.2	3.0
1989	320	24.9	340.4	458.4	489.9	485.7	425.7	4.2
1990	240	28.0	298.2	400.2	442.5	442.4	140.6	4.0
1991	240	1.7	289.1	311.1	352.5	338.3	38.0	4.3
1992	108		141.7	191.7	222.5	206.6	41.0	2.8
1993	108	6.7	93.4	143.3	170.2	105.7	5.4	2.4
1994	108		75.0	85.0	103.3			2.4

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1995								2.3
1996								2.3
1997								2.2
1998								2.2
1999								2.2
2000								2.2
2001								2.2
2002								2.2
2003								2.2
2004								2.2
2005								2.2
2006								2.2
2007								2.2
2008								2.2
2009								2.2
2010								2.2
2011								2.2
Subtot	1427	232.5	1855.9	2616.1	2782.7	2575.9	1582.0	

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1205 Military Construction, Navy								
1986				0.7	0.7			2.8
1987								2.7
1988				11.8	12.0			3.0
1989								4.2
1990				1.3	1.4			4.0
1991				6.5	7.3			4.3
1992				1.0	1.1			2.8
1993								2.4
1994								2.4
1995								2.3
1996								2.3
Subtot				21.3	22.5			
Grand Total	1427	232.5	1855.9	3922.4	3926.1	3657.3	2636.9	

17. (U) **Production Rate Data:**

a. (U) Production Baseline Rate

The steady-state, full-rate production baseline of 320 units per year was approved on 23 JAN 89.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	103.3	103.3	103.3	0.0	0.0
Procurement Qty	108	108	108	0	0
Proc. Unit Cost	0.956	0.956	0.956	0.000	0.000
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	0.0	0.0	0.0	0.0

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	48/48
Procurement	863/765

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

The costs are for the operation and support of the ADCAP Torpedo. The data was prepared by PMO402 based on the Milestone four life cycle cost estimate approved by NPDM dtd 7 January 1993. Cost categories are Direct Depot Support, Sustaining Investment, Other Direct Costs, and Personnel. Direct Depot Support Costs are summary costs which include costs associated with depot maintenance and costs to support Intermediate maintenance facilities. Sustaining Investment costs include costs directly supporting fleet exercise firings and non-depot sustaining maintenance. The Other Direct Costs category includes administration and management costs, and reimbursable amounts paid to SPCC for parts support. Personnel consists of

18a. (U) Operating and Support Costs (Cont'd):
MILPERS estimates of ADCAP related costs.

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost for ADCAP	Avg Annual Cost for MK 48
Direct Depot Maintenance	52.8	40.4
Sustaining Investment	18.6	20.2
Other Direct Costs	6.9	9.6
Consumables/Personnel	30.2	30.4
Total	108.5	100.6

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M Industrial Fund	24.7	7.2	7.5	326.8	366.2
Total	24.7	7.2	7.5	326.8	366.2

N-33 SSN 688

92-140

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SSN 688 ATTACK SUB

AS OF DATE: December 31, 1992

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AS AMENDED
AS CLEARED
FOR OPEN PUBLICATION

MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

9

1. (U) **Designation and Nomenclature (Preferred Name):**
SSN 688 Class Nuclear Submarine (Los Angeles Class)

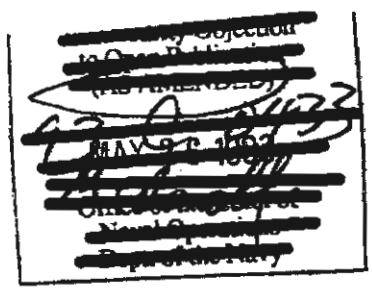
2. (U) **DoD Component:** Navy

3. (U) **Responsible Office and Telephone Number:**

NAVAL SEA SYSTEMS COMMAND	CAPT P. M. HUBER
PMS 393	Assigned: March 1, 1991
WASHINGTON, DC 20362-5101	AV 332-3407 COMM 703 602-3405

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 0603569N Project S1803
PE 0604567N Project S1570
PROCUREMENT:
APPN 1611 ICN 02 01 2010 (Navy)
MILCON:
PE 0804731N



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93-703

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5. (U) **Related Programs:**
Harpoon, Tomahawk, SSBN (Trident), BSY-1 Advanced Combat System, SSN-21.

(b)(1)

[redacted]

7. (U) **Program Highlights:**

a. (U) Significant Historical Developments --
The SSN 688 Class submarine construction program consists of 62 awarded ships from FY 70 to FY 90: 33 awarded to General Dynamics Corporation, Electric Boat Division, and 29 to Newport News Shipbuilding. Prior to the period covered by this SAR, 47 ships had been delivered to the Navy--27 by Electric Boat and 20 by Newport News.

b. (U) Significant Developments Since Last Report --
General Dynamics Corporation, Electric Boat Division, delivered two SSN 688 Class submarine to the Navy in 1992, the USS SPRINGFIELD (SSN 761) on Dec 8, 1992, and the USS ANNAPOLIS (SSN 760) on May 21, 1992. Newport News Shipbuilding delivered the USS JEFFERSON CITY (SSN 759) on 30 Jan 1992 and USS BOISE (SSN 764) on 18 Sep 1992. The total number of ships delivered since program inception is 51. In addition, four SSN 688's were launched in 1992: the USS COLUMBUS (SSN 762) on AUG 1, and the USS SANTA FE (SSN 763) on DEC 12, 1992 at Electric Boat and the USS HAMPTON (SSN 767) on Apr 3, 1992 and the USS CHARLOTTE (SSN 766) on Oct 4, 1992 at Newport News Shipbuilding.

c. (U) Changes Since As Of Date --
The USS MONTPELIER (SSN 765) was delivered on Jan 28, 1993 by Newport News Shipbuilding.

8. (U) Threshold Breaches:
There are no breaches to the Approved Program Baseline (APB) dated 31 December 1988. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Characteristics Approved	NOV 68	N/A	NOV 68
DSARC I	FEB 70	N/A	FEB 70
DSARC Production Approval	N/A	JAN 71	JAN 71
DCP #27 Approved	MAR 70	N/A	MAR 70
Lead Ship Los Angeles Delivered	DEC 74	NOV 76	NOV 76
Production Contract	JAN 71	N/A	JAN 71
Production Started	JAN 71	N/A	JAN 71
Lead Ship Launch	MAR 73	N/A	APR 74
Acceptance Trials -- Lead Ship	DEC 74	N/A	OCT 76
Lead Ship Los Angeles IOC	DEC 74	NOV 76	NOV 76
Last Follow-Ship (65) Delivery	MAY 96	MAY 96	AUG 96(Ch-1)

b. (U) Previous Change Explanations --

Early ships experienced schedule delays primarily due to late contractor-furnished equipment, shipbuilder's limitations in application of his work force, production/productivity problems, and late and defective design agent furnished information. Follow ships were delayed to maintain intervals between ships. Additional delays resulted from strikes at Electric Boat during Jun-Nov 1975 and Jun-Oct 1988. Four ships in FY 1990, 1991 and FY 1992 were deleted from the program in prior years. The sixty-second and last ship of the class was awarded to Newport News Shipbuilding on 28 November 1989 and is projected to deliver October 1995.

c. (U) Current Change Explanations --

(Ch-1) From October 1995 to August 1996 due to schedule delay resulting from Improved Performance Machinery Program (IPMP) problems encountered earlier in the construction program as well as shipbuilder generated changes to reflect the most economical/effective schedules to complete the SSN 688 Class New Construction Program.

d. (U) References --

(U) Development Estimate:
DCP #104 dated September 1970, revised and reapproved 13 April 1978. USDR&E letter 13 March 1970 cancelled DCP #104 and returned surveillance to the Navy. DCP #27, dated 19 March 1970. Ship

9d. (U) Schedule (Cont'd):
Construction Awards dated 8 January 1971.

(U) Approved Program:
Approved Acquisition Program Baseline dated 31 December 1988.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Length (ft)	360	N/A / N/A	360	360
Beam Maximum (ft)	33	N/A / N/A	33	33
Draft Dev. (ft)	32	N/A / N/A	32	32
Displacement (tons)	6900	N/A / N/A	6900	6900

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

AN/BQQ-5B are based on demonstrated performance during OPEVAL and FOT&E. Deleted from DCP #104 on 9 September 1975.

c. (U) Current Change Explanations -- NONE.

10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Development Estimate:
DCP #104 dated September 1970, revised and reapproved 13 April 1978. USDR&E letter 13 March 1970 cancelled DCP #104 and returned surveillance to the Navy. DCP #27, dated 19 March 1970. Ship Construction Awards dated 8 January 1971.

(U) Approved Program:
Approved Acquisition Program Baseline dated 31 December 1988.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	0.0	24.5	24.4
Procurement	5126.8	11960.2	11728.1
Other	(5126.8)		(11728.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	20.4	20.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 71 Base-Year $	5126.8	12005.1	11773.0
Escalation	620.7	16074.5	16317.5
Development (RDT&E)	(0.0)	(23.3)	(23.4)
Procurement	(620.7)	(16033.3)	(16276.2)
Construction (MILCON)	(0.0)	(17.9)	(17.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	5747.5	28079.6	28090.5
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	32	63	62
Total	32	63	62

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs --
The nuclear propulsion cost is $3870.6 M in then-year dollars.

e. (U) References --

(U) Development Estimate:
DCP #104 dated September 1970, revised and reapproved 13 April 1978. USDR&E letter 13 March 1970 cancelled DCP #104 and returned

11e. (U) Total Program Cost and Quantity (Cont'd):
surveillance to the Navy. DCP #27, dated 19 March 1970. Ship Construction Awards dated 8 January 1971.

(U) Approved Program:
Approved Acquisition Program Baseline dated 31 December 1988.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	28090.5	28068.6	28090.5
(2) Quantity	62	62	62
(3) Unit Cost	453.07	452.72	453.07
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	91.5	91.5	80.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	91.5	91.5	80.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	0.0	5747.5	0.0	5747.5
Previous Changes:				
Economic	+6.2	-4813.1	-5.0	-4811.9
Quantity	-	+22306.6	-	+22306.6
Schedule	-	+87.3	-	+87.3
Engineering	+40.0	+1879.6	-	+1919.6
Estimating	+1.6	+1733.7	+0.2	+1735.5
Other	-	-	-	-
Support	-	+1040.8	+43.2	+1084.0
Subtotal	+47.8	+22234.9	+38.4	+22321.1
Current Changes:				
Economic	-	-86.2	-	-86.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+108.1	-	+108.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+21.9	-	+21.9
Total Changes	+47.8	+22256.8	+38.4	+22343.0
Current Estimate	47.8	28004.3	38.4	28090.5

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1971 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	0.0	5126.8	0.0	5126.8
Previous Changes:				
Quantity	-	+5628.0	-	+5628.0
Schedule	-	+14.6	-	+14.6
Engineering	+23.2	+500.4	-	+523.6
Estimating	+1.2	+262.7	+0.1	+264.0
Other	-	-	-	-
Support	-	+160.3	+20.4	+180.7
Subtotal	+24.4	+6566.0	+20.5	+6610.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+35.3	-	+35.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+35.3	-	+35.3
Total Changes	+24.4	+6601.3	+20.5	+6646.2
Current Estimate	24.4	11728.1	20.5	11773.0

b. (U) Previous Change Explanations --

RDT&E

Engineering: Increase to fund costs directly related to the SSN 688 Class Program.

Estimating: Correction of rounding error.

Procurement

Economic: Revised escalation indices.

Quantity: Addition of 2 SSNs since the authorization of the DE and 28 SSNs at the established baseline value.

Schedule: Revision of schedule baseline.

Engineering: Changes to the propulsion plant associated with the Long life core, cost reduction improvements and the addition of VLS, BSY-1, and IPMP.

13b. (U) Cost Variance Analysis (Cont'd):

Estimating: Refined estimates to reflect later pricing data including shipbuilding contract price, change orders and GFE.

Support: Increased outfitting and post delivery requirements.

MILCON

Economic: Revised escalation indices.

Estimating: Correction of rounding error

Support: Fund Military Construction projects at New London, Norfolk, San Diego, Portsmouth, and Pearl Harbor.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised economic escalation indices. (Economic)	N/A	-86.2
Current & Prior Inflation Offset. (Estimating)	+23.9	+76.7
Decrease in outfitting and post delivery requirements (Estimating)	-1.8	-4.8
Refined estimates to reflect later pricing data including shipbuilding contract price, change orders and GFE. (Estimating)	+13.2	+36.2
Procurement Subtotal	+35.3	+21.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
165.80	18.40	-5.20	--	--	--	--	0.60	13.80	179.60

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
179.61	-79.00	272.88	1.41	30.96	29.74	--	17.48	273.47	453.07

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) FLIGHT X SHIPS:
GENERAL DYNAMICS CORP, GROTON, CT
N00024-86-C-2076, FPIF
Award: March 21, 1986
Definitized: March 21, 1986

Initial Contract Price		
Target	Ceiling	Qty
$1032.6	$1171.1	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1239.1	$1382.8	4	$1537.2	$1522.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-58.2	$-21.4
Cumulative Variances To Date (12/26/92)	$-61.9	$7.6
Net Change	$-3.7	$29.0

Explanation of Change:

The worsening cost variance reflects the results of aggressive price competition at the time of original contract award. The improved schedule variance is due to more accurate data as a result of Electric Boat improvements to their accounting system.

The Program Manager is aggressively monitoring the shipbuilder's ability to deliver all FY 86 ships by the end of 1993. The second ship has been delivered. The government's liability for this contract is ceiling.

15. (U) Contract Information (Cont'd):

(U) FLIGHT XI SHIPS:	Initial Contract Price Target	Ceiling	Qty
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS, VA N00024-87-C-2007, FPIF Award: February 6, 1987 Definitized: February 6, 1987	$1018.1	$1209.3	4

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1248.7	$1449.3	4	$1522.6	$1512.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-214.8	$-58.6
Cumulative Variances To Date (12/27/92)	$-302.3	$-25.8
Net Change	$-87.5	$32.8

Explanation of Change:

The worsening cost variance reflects aggressive price competition at the time of original contract award and the increase in complexity associated with the Improved Performance Machinery Program (IPMP) propulsion plant installed in Charlotte (SSN 766). The improved schedule variance over the past year, with the first two ships completed, is due to learning associated with modular construction.

The government's liability for this contract is the current ceiling price.

(U) FLIGHT XII SHIPS - NNS:	Initial Contract Price Target	Ceiling	Qty
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS, VA N00024-88-C-2195, FPIF Award: June 30, 1988 Definitized: June 30, 1988	$606.7	$698.7	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1120.1	$1264.1	3	$1189.3	$1207.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-60.0	$-68.5
Cumulative Variances To Date (01/25/93)	$-112.7	$-47.8
Net Change	$-52.7	$20.7

Explanation of Change:

The worsening cost variance reflects increased submarine construction

15. (U) Contract Information (Cont'd):
complexity, and an optimistic budget due to the effects of aggressive competition. The improved schedule variance is due to learning associated with modular construction.

(U) FLIGHT XII SHIPS - EB:	Initial Contract Price Target	Ceiling	Qty
GENERAL DYNAMICS CORP, GROTON, CT N00024-88-C-2196, FPIF Award: June 30, 1988 Definitized: June 30, 1988	$399.9	$475.0	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$876.1	$1012.1	2	$820.1	$839.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-17.9	$-20.8
Cumulative Variances To Date (12/26/92)	$-23.1	$-23.7
Net Change	$-5.2	$-2.9

Explanation of Change:

The worsening cost variance reflects aggressive price competition at the time of original contract award and the increase in complexity associated with the Improved Performance Machinery Program (IPMP) propulsion plant installed in Columbia (SSN 771). The nominal improvement in the schedule variance is due to more accurate data as a result of Electric Boat improvements to their accounting system.

The Program Manager increased his final price from the prior year due to the Improved Propulsion Machinery Program Requirements.

(U) SSN ATTACK SUB:	Initial Contract Price Target	Ceiling	Qty
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS, VA N00024-90-C-2100, FPIF Award: November 28, 1989 Definitized: November 28, 1989	$412.9	$467.5	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$471.0	$526.3	1	$423.8	$438.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-6.7	$-33.4
Cumulative Variances To Date (11/22/92)	$-18.4	$-16.6
Net Change	$-11.7	$16.8

15. (U) Contract Information (Cont'd):

Explanation of Change:

The worsening cost variance reflects aggressive price competition at the time of original contract award and the increase in complexity associated with the Improved Performance Machinery Program (IPMP) propulsion plant installed in Cheyenne (SSN 773). The schedule variance improvement reflects the leveling of costs as the contract gets underway. Overhead rates are typically higher at the beginning of the contract and then decrease throughout the life of the contract as material procurement and delivery improve. The original variance was calculated on 12% completion and only provided a limited projection value.

The schedule variance reflects increased problems with the declining vendor base.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 86.2% (25 yrs/29 yrs)

(2) Percent Program Cost Appropriated: 99.4% ($27924.7 / $28090.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY69-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-97)	Total
RDT&E	47.8	-	-	-	47.8
Procurement	27838.5	80.4	66.6	18.8	28004.3
MILCON	38.4	-	-	-	38.4
O&M	-	-	-	-	-
Total	27924.7	80.4	66.6	18.8	28090.5

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1970				0.5	0.5	0.5	0.5	5.5
1971				1.8	1.8	1.8	1.8	5.1
1972				1.1	1.2	1.2	1.2	4.6
1973				1.1	1.2	1.2	1.2	4.4
1974				0.4	0.5	0.5	0.5	8.0
1977				1.2	1.8	1.8	1.8	2.6
1978				1.0	1.7	1.7	1.7	6.8
1979				3.6	6.6	6.6	6.6	8.4
1980				1.3	2.7	2.7	2.7	10.6
1981				2.2	4.7	4.7	4.7	10.6
1982				2.2	5.0	5.0	4.9	7.6
1983				3.1	7.5	7.5	7.4	4.9
1984				1.7	4.3	4.3	4.2	3.8
1985				1.2	3.0	3.0	2.9	3.4
1986				2.0	5.3	5.3	5.2	2.8
1987								2.7
Subtot				24.4	47.8	47.8	47.3	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1969				23.9	26.5	26.5	26.5	
1970	3		566.2	542.3	601.2	601.2	601.2	5.6
1971	4		517.8	517.8	617.2	617.2	617.2	5.1
1972	5		696.3	696.3	911.5	911.5	906.4	4.4
1973	6		706.9	706.9	1041.8	1041.8	1022.8	5.3
1974	5		575.2	575.2	935.1	935.1	925.7	9.0
1975	3		296.0	296.0	531.7	531.7	529.8	14.1
1976	2		299.3	299.3	579.7	579.7	579.7	11.5
197T				89.2	190.5	190.5	190.5	2.0
1977	3		746.8	659.9	1417.1	1415.0	1409.9	6.2
1978	1		192.6	192.6	451.6	451.6	450.0	8.2
1979	1		316.6	316.7	757.7	757.7	755.0	9.6
1980	2		388.0	388.2	1008.9	1008.9	1001.7	9.9
1981	2		428.3	433.1	1162.0	1162.0	1150.4	9.6
1982	2		558.6	558.6	1542.5	1539.7	1527.8	7.5
1983	2		624.5	624.5	1751.5	1751.5	1716.3	3.8
1984	3		732.7	732.8	2092.6	2092.4	2057.1	3.6
1985	4		965.1	965.1	2806.0	2806.0	2708.7	2.1

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1986	4		841.1	841.3	2497.0	2478.2	2260.8	1.1
1987	4		825.4	829.9	2511.4	2416.9	2155.6	1.5
1988	3		589.8	597.4	1849.6	1757.0	1188.1	2.3
1989	2		418.1	424.4	1342.8	1283.2	706.2	2.8
1990	1		255.9	261.9	845.8	756.9	388.0	1.3
1991				14.4	47.4	41.9	34.9	1.3
1992				67.5	227.9	5.3	5.3	1.7
1993				26.5	91.5			2.4
1994				22.8	80.4			2.4
1995				18.5	66.6			2.3
1996				4.8	17.7			2.3
1997				0.3	1.1			2.2
Subtot	62		11541.2	11728.1	28004.3	27159.4	24915.6	
Appropriation: 1205 Military Construction, Navy								
1973				2.9	3.9	3.9	3.9	5.6
1974				1.6	2.3	2.3	2.3	11.8
1975				2.7	4.3	4.3	4.3	16.1

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1976				4.2	7.0	7.0	7.0	3.0
1978				2.5	4.8	4.8	4.8	7.7
1979				3.8	7.6	7.6	7.6	9.3
1982				0.2	0.6	0.6	0.6	7.6
1987				2.0	6.1			2.7
1988								
1989				0.6	1.8			4.2
Subtot				20.5	38.4	30.5	30.5	
Grand Total	62		11541.2	11773.0	28090.5	27237.7	24993.4	

FOR FY 1987-9: OBLIGATIONS AND EXPENDITURES ARE CURRENTLY BEING OBTAINED FROM NAVFAC AND WILL BE REPORTED IN THE NEXT SAR.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Not required for programs that produce at a rate of less than 6 items per year.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		80.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		66.6		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		18.8		N/A	N/A

N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	52/52

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

not required

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

N-4 AN/SQQ-89

92-105

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AN/SQQ-89 ASWCS

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 27 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

2

1. (U) Designation and Nomenclature (Preferred Name):
ASW COMBAT SYSTEM

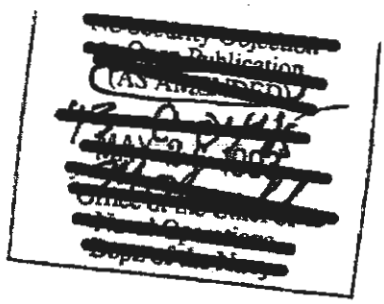
2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
PM for Surface Ship ASWCS Program
ATTN: PMO411
2531 Jefferson Davis Hwy
Arlington, VA 22242-5169

CAPT G. K. NIPONTOFF
Assigned: January 31, 1992
AV 286-3000 COMM (703) 746-3000

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0205620N Project V0896
PE 0604212N Project W1707
PE 0604575N Project S1451
PE 0604713N Project S0234, V1916



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93-718

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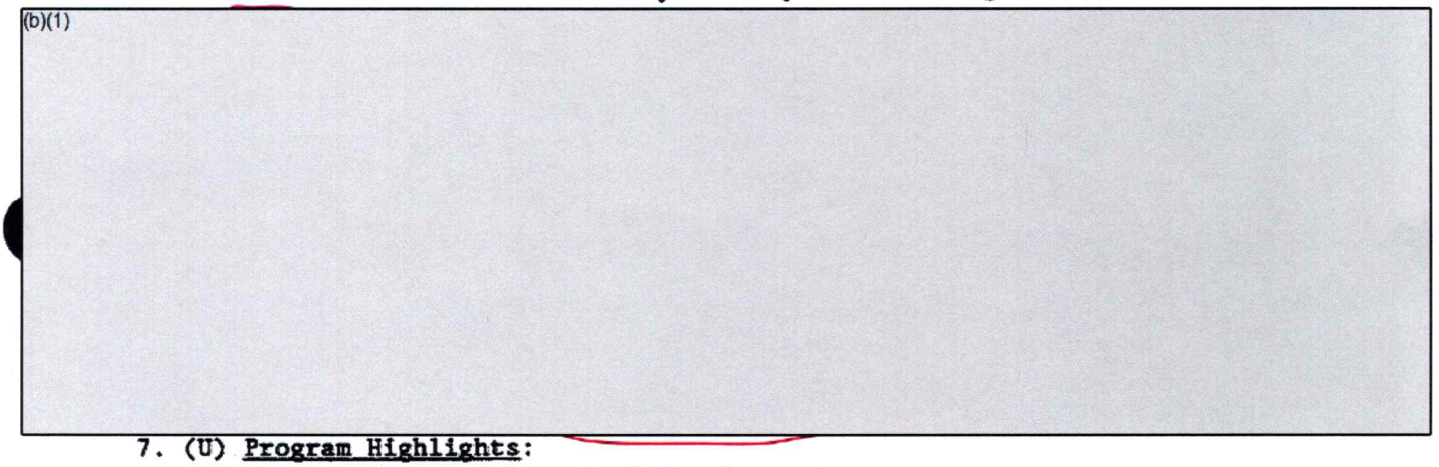
4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 1810 ICN 33213300 (Navy)
APPN 1810 ICN 33213400 (Navy)
APPN 1810 ICN 33213600 (Navy)
APPN 1810 ICN 33223600 (Navy)
APPN 1810 ICN 33425500 (Navy)
APPN 1810 ICN 33425500 (Navy)
APPN 1810 ICN 33545200 (Navy)
MILCON:
PE 0204262N
O & M:
PE 78012N, 78017N

5. (U) Related Programs:
LAMPS MK III and the Surface ASW System Improvement Programs

(b)(1)



7. (U) Program Highlights:
a. (U) Significant Historical Developments --

The various subsystems in the AN/SQQ-89 were originally developed under independent programs. The subsystems were designed so that they could be integrated into a single system. Subsequent to FY87, only AN/SQQ-89 systems were procured and the AN/SQQ-89 subsystems lost their separate identities.

Subsystem testing has been completed as follows:

SUBSYSTEM	OPERATIONAL TESTING COMPLETED
AN/SQR-19	1983
AN/SQQ-28	1981
AN/SQS-53B	1983
MK 116	1982
AN/SRQ-4	1981

7a. (U) Program Highlights (Cont'd):

AN/SQS-53C 1989

AN/SRQ-4 is a data link between AN/SQQ-89 and the LAMPS MK III helicopter and is included as part of the AN/SQQ-89 for SAR reporting. Responsibilities and funding for the AN/SRQ-4 and AN/SQQ-28 were transferred from the LAMPS MK III SAR to the AN/SQQ-89 SAR.

The AN/SQS-53C subsystem entered full rate production in June 1989.

The FY89 production option on contract N00024-88-C-6219 was awarded to General Electric (GE) in June 1989.

The AN/SQQ-89 TEMP 802-2 was approved 27 April 1990.

The FY90 competitive AN/SQQ-89 production contract was awarded to Westinghouse Electric Corporation (WEC) on 14 June 1990.

Congress directed in the FY90 and FY91 Appropriation Acts that the AN/SQQ-89 be redesigned to incorporate Advanced Video Processor (AVP). Congress further directed that AN/SQQ-89s procured in FY91 for DDG 51 Class ships incorporate AVP.

Congress provided $30M in FY90 to redesign the AN/SQQ-89 to incorporate the AN/UYS-2 Enhanced Modular Signal Processor (EMSP). $24M was used to procure AN/UYS-2 units for development testing and the remainder was used to fund non-recurring costs required to support the AN/SQQ-89 redesign effort. Congress provided an additional $30M in FY91 and directed the Navy to budget additional funds to redesign the AN/SQQ-89 to incorporate the AN/UYS-2 EMSP. AT&T was awarded a $26.6M R&D contract on September 30, 1992 for EMSP Software Conversion, and the remaining $3.4M was used to fund in-house lab effort. Funds to include EMSP as a part of the AN/SQQ-89 program are budgeted starting in FY92.

The FY91 competitive production contract was awarded to GE on 15 February 1991.

OT-IIIB was completed in March, 1991. COMOPTEVFOR reported "within constraints imposed by the equipment configurations and limitations to scope testing, the AN/SQQ-89(V)4 is determined to have the potential to be operationally effective." OT-IIIC has been extended to cover retesting. Final test dates have yet to be determined between PMO411 and PMS400.

The AN/SQY-1 program was terminated in November 1991. Funds for

7a. (U) Program Highlights (Cont'd):

the Surface ASW Systems Improvement program were transferred to the AN/SQQ-89 ASWCS SAR beginning in December 1991.

PMO411 plans to procure AN/SQQ-89s and AN/SRQ-4s beyond FY95 using SCN funds for DDG and DDV. This information will be provided in the DDG 51 SAR.

b. (U) Significant Developments Since Last Report --

ASN(RD&A) letter signed 31 January 1992 reported the decision not to pursue or restructure the AN/SQY-1 program and to modify the AN/SQQ-89. A second letter dated 17 March 1992 presented the Navy's plan to forego a major upgrade to the AN/SQQ-89 and, instead, incrementally modernize the system. This approach was approved by USD(A), and it is expected that the modernization program will result in cost savings.

PMO411 is procuring the AN/SQS-53A/B Product Improvement (PI) engineering change, which incorporates much of the AN/SQS-53C but retains the existing transducers and transmitters on ships currently equipped with AN/SQS-53A and AN/SQS-53B sonars. The modification of AN/SQS-53A and AN/SQS-53B systems on DD963 class ships with the AN/SQS-53A/B PI will lead to a common software configuration across the ship class and will reduce the recurring cost to backfit AN/SQS-53C capability by 50%.

Negotiations for the closure of the Advanced Video Processor contract have begun and are expected to be completed in the 3rd quarter of FY93. CI Mode testing is being performed, as directed by Congress, and is expected to be completed by September 1993.

In FY92 Congress directed the Navy to develop an Integrated Display Station as an engineering change proposal (ECP) to the existing AVP. A Commerce Business Daily (CBD) announcement was released on 8 January 1992 notifying private industry of the Navy's plans. The contract was awarded to Diagnostic Retrieval Systems (DRS) on 15 April 1992.

A CBD announcement was made for the AN/UYS-2 Enhanced Modular Signal Processor (EMSP) software conversion effort; which will allow for the replacement of the AN/UYS-1 by the AN/UYS-2 in the AN/SQQ-89. The contract was awarded to AT&T on 30 September 1992.

A CBD announcement was made for the FY92 AN/SQQ-89 production contract with options for FY93, FY94 and FY95. Westinghouse Electric Corporation (WEC) was awarded the contract on 11 September 1992.

7b. (U) Program Highlights (Cont'd):

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --
On April 20, 1993, there was a reprogramming action, deleting an additional $4M from the AN/SQQ-89 Surface ASWCS Improvement Program (RDT&E) line.

The FY93 production option of contract N00024-92-C-6300 was exercised on 23 February 1993 to WEC.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 10 May 1991) breaches or Nunn McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
AN/SRQ-4 Subsystem			
FSD Contract Award	SEP 77	SEP 77	SEP 77
DNSARC III	JUN 82	JUN 82	JUN 82
Approval for Production	DEC 82	DEC 82	DEC 82
AN/SRQ-19 Subsystem			
FSD Contract Award	OCT 76	OCT 79	OCT 79
DNSARC III	NOV 80	MAR 83	MAR 83
Approval for Production	MAR 83	DEC 84	DEC 84
AN/SQQ-28 Subsystem			
FSD Contract Award	FEB 78	FEB 78	FEB 78
DNSARC IIIA (PASU)	DEC 81	DEC 81	DEC 81
DNSARC IIIB (ASU)	AUG 82	AUG 82	AUG 82
AN/SQS-53B Subsystem			
FSD Contract Award	JUN 79	JUN 79	JUN 79
DNSARC III	DEC 82	DEC 82	DEC 82
Approval for Production	JUN 83	JUN 83	JUN 83
AN/SQS-53C Subsystem			
FSD Contract Award	MAY 82	MAY 82	MAY 82
DNSARC IIIA	JAN 86	JAN 86	JAN 86
Navy Prod Decision Memo IIIB	SEP 86	SEP 86	SEP 86
Navy Prod Decision Memo IIIC	DEC 87	DEC 87	MAR 88
Approval for Production	DEC 87	DEC 87	JUN 89
MK 116 Subsystem			
Approval for Production	DEC 82	DEC 82	DEC 82

b. (U) Previous Change Explanations -- None.

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
(1) DCP-92 dated August 16, 1976 (AN/SQR-19)
(2) DCP-85 dated March 5, 1979 (AN/SRQ-4 and AN/SQQ-28)
(3) OR 062-03-86 dated December 24, 1985 (AN/SQQ-89)
(4) ASN (RE&S) Milestone IIIC (NPDM held November 19, 1987; Decision Memorandum was issued March 1988) (AN/SQS-53C); The AN/SQS-53C subsystem entered full rate production in June 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 10 May 1991.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --

Demonstrated performances of the AN/SQR-19 subsystem Figure of Merit (FOM) and Array MTBF have been revised to accurately show performance demonstrated subsequent to TECHEVAL/OPEVAL. The current estimates in Streaming and Recovery Time and Array MTTR have been revised to accurately show performance being achieved.

Operational performance thresholds for the AN/SQQ-89 system have been identified in TEMP 802-2.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
(1) DCP-92 dated August 16, 1976 (AN/SQR-19)
(2) DCP-85 dated March 5, 1979 (AN/SRQ-4, AN/SQQ-28)
(3) OR 062-03-86 dated December 24, 1985 (AN/SQQ-89)
(4) ASN (RE&S) Milestone IIIC (NPDM held November 19, 1987; Decision Memorandum was issued March 1988) (AN/SQS-53C); The AN/SQS-53C subsystem entered full rate production in June 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 10 May 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	754.2	1331.2	1065.5
Procurement	2961.0	2637.6	2362.6
Major System Equipment	(1986.5)		(1286.5)
System Support	(207.9)		(415.8)
Total Sailaway	(2194.4)		(1702.3)
Other Weapon Systems Cost	(548.3)		(476.3)
Peculiar Support	(0.0)		(16.6)
Initial Spares	(218.3)		(167.4)
Construction (MILCON)	0.0	4.6	4.5
Ops. and Maint. (O&M)	183.8	N/A	79.3
Total FY 85 Base-Year $	3899.0	3973.4	3511.9

11a. (U) Total Program Cost and Quantity (Cont'd):

	Production Estimate	Approved Program	Current Estimate
Escalation	248.6	630.4	396.0
Development (RDT&E)	(-66.4)	(76.0)	(-36.5)
Procurement	(291.9)	(554.6)	(427.1)
Construction (MILCON)	(0.0)	(-0.2)	(-0.1)
Ops. and Maint. (O&M)	(23.1)	(N/A)	(5.5)
Total Then-Year $	4147.6	4603.8	3907.9

b. (U) Quantity --

Development (RDT&E)	0	N/A	0
Procurement	120	92	75
Total	120	92	75

c. (U) Foreign Military Sales/International Cooperative Programs --

(1) AN/SQR-19

Spain: 3 AN/SQR-19 subsystems in FY83 for $50.9M
1 AN/SQR-19 subsystem in FY87 for $8.0M
2 AN/SQR-19 subsystems in FY92 for $11.8M

Canada: 7 Handling and Stowage Groups (H&SGs) and
8 Towed Array Groups (TAGs) in FY85 for $47.1M
6 TAGs in FY91 for $13.2M

(2) AN/SQQ-28

Spain: 4 AN/SQQ-28 subsystems in FY81 for $14.2M
2 AN/SQQ-28 subsystems in FY92 for $1.8M

Canada: 1 AN/SQQ-28 subsystem in FY85 for $2.3M

(3) AN/UYQ-25

Spain: 6 AN/UYQ-25 subsystems in FY93 for $.5M

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
(1) DCP-92 dated August 16, 1976 (AN/SQR-19)
(2) DCP-85 dated March 5, 1979 (AN/SRQ-4, AN/SQQ-28)
(3) OR 062-03-86 dated December 24, 1985 (AN/SQQ-89)
(4) ASN (RE&S) Milestone IIIC (NPDM held November 19, 1987; Decision Memorandum was issued March 1988) (AN/SQS-53C); The AN/SQS-53C subsystem entered full rate production in June 1989.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 10 May 1991.

11e. (U) Total Program Cost and Quantity (Cont'd):

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3907.9	4460.4	3907.9
(2) Quantity	75	84	75
(3) Unit Cost	52.105	53.100	52.105
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	155.1	155.1	94.2
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	155.1	155.1	94.2
(2) Quantity	10	10	6
(3) Unit Cost	15.510	15.510	15.700

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	687.8	3252.9	0.0	206.9	4147.6
Previous Changes:					
Economic	+10.1	+124.4	-	+5.3	+139.8
Quantity	-	-949.4	-	-	-949.4
Schedule	+4.5	+568.7	-	-	+573.2
Engineering	+6.7	+208.9	-	-	+215.6
Estimating	+676.1	-100.6	-	-24.9	+550.6
Other	-	-	-	-	-
Support	-	-118.9	+4.4	-102.5	-217.0
Subtotal	+697.4	-266.9	+4.4	-122.1	+312.8
Current Changes:					
Economic	-8.2	-66.7	+0.1	+0.4	-74.4
Quantity	-	-192.7	-	-	-192.7
Schedule	-	-25.0	-	-	-25.0
Engineering	-	+186.7	-	-	+186.7
Estimating	-348.0	-86.7	-0.1	-0.4	-435.2
Other	-	-	-	-	-
Support	-	-11.9	-	-	-11.9
Subtotal	-356.2	-196.3	-	-	-552.5
Total Changes	+341.2	-463.2	+4.4	-122.1	-239.7
Current Estimate	1029.0	2789.7	4.4	84.8	3907.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	754.2	2961.0	0.0	183.8	3899.0
Previous Changes:					
Quantity	-	-779.7	-	-	-779.7
Schedule	+4.7	+298.3	-	-	+303.0
Engineering	+9.0	+167.4	-	-	+176.4
Estimating	+549.2	-72.6	-	-23.2	+453.4
Other	-	-	-	-	-
Support	-	-94.4	+4.6	-80.9	-170.7
Subtotal	+562.9	-481.0	+4.6	-104.1	-17.6
Current Changes:					
Quantity	-	-145.7	-	-	-145.7
Schedule	-	-51.6	-	-	-51.6
Engineering	-	+131.2	-	-	+131.2
Estimating	-251.6	-39.4	-0.1	-0.4	-291.5
Other	-	-	-	-	-
Support	-	-11.9	-	-	-11.9
Subtotal	-251.6	-117.4	-0.1	-0.4	-369.5
Total Changes	+311.3	-598.4	+4.5	-104.5	-387.1
Current Estimate	1065.5	2362.6	4.5	79.3	3511.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Program restructured due to funding constraints.

Engineering: System redesigned to use new Navy standard hardware.

Estimating: Increased contractor support costs, hardware development and integration costs. Increased costs due to funding deferments and an addition of 3 years funding for ASWCSI. Increase from transfer of funds from the AN/SQY-1 program to meet fleet requirements and to incorporate next generation of Navy standards and Congressionally mandated AVP and EMSP. Refinement of estimates to reflect program

13b. (U) Cost Variance Analysis (Cont'd):
cuts.

Procurement

Economic: Revised escalation indices.

Quantity: Decreased ship market.

Schedule: Program restructured due to funding restraints and the addition of one more year of funding. Revised ship installation schedule with reduction in procurement rate.

Engineering: System redesigned to use new Navy standard hardware.

Estimating: Change due to administrative error in applying Then-Year dollar factors only instead of outlay factors. Increased contractor support costs, hardware development, and integration costs. Revisions in the ship schedule; different hulls require different equipment upgrades. Increase in component cost due to decrease in quantity procured. Current and prior inflation offset.

Support: Change in procurement requirements. FMP has been previously reported as O&M,N in FY84-FY89. FMP funding has been transferred to the OPN account by PBD631. Decrease in spares and other support due to funding constraints.

MILCON

Support: PMA266 transfer of AN/SQQ-28 and AN/SRQ-4 MILCON funding. This funding was for the construction of operations and maintenance facilities in Mayport, Florida and N.I. San Diego, California.

O & M

Economic: Revised escalation indices.

Estimating: Refinement of estimate to include two additional program years for shipboard portion of LAMPS MK III (AN/SRQ-4 and AN/SQQ-28) programs.

Support: O&M,N funding has been transferred to OPN FMP.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-13.0

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Economic Adjustment for Negative Program Change. (Economic)	N/A	+4.8
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.5
Restructure of program development effort. (Estimating)	-251.9	-348.5
RDT&E Subtotal	-251.6	-356.2
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-40.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	-26.5
Total Variance associated with decrease of 9 units.	-224.1	-296.8
Quantity Variance resulting from decrease of 9 units. (Quantity)	-145.7	-192.7
Schedule Variance associated with Quantity decrease. (Schedule)	-50.2	-76.1
Engineering Variance associated with Quantity decrease. (Engineering)	-28.2	-28.0
Change in procurement buy schedule. (Schedule)	-1.4	+51.1
AN/SQS-53A/B Product Improvement (PI) (Engineering)	+159.4	+214.7
Adjustment for Current & Prior Inflation. (Estimating)	+11.5	+13.7
Contract Savings - WEC FY92 Production Contract w/ outyear options FY93-95 (Estimating)	-119.6	-145.9
AN/SQS-53A/B PI cost impact (Estimating)	+66.0	+41.9
Adjustment for Current & Prior Inflation. (Support)	+2.7	+3.6
Decrease in spares and other support due to quantity decrease and associated WEC savings. (Support)	-127.3	-174.9
Adjustment for the addition of FY96-99 installation costs. (Support)	+115.4	+163.0
Correction to align flyaway and support cost (Estimating)	+2.7	+3.6

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Correct to realize flyaway and support costs (Support)	-2.7	-3.6
Procurement Subtotal	-117.4	-196.3
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1
MILCON Subtotal	-0.1	--
(4) O & M		
Revised economic escalation indices. (Economic)	N/A	+0.4
Adjustment for Current & Prior Inflation. (Estimating)	-0.4	-0.4
O & M Subtotal	-0.4	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
34.563	0.872	5.510	7.309	5.364	1.539	--	-3.052	17.542	52.105

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) EMSP Software Conversion:	Initial Contract Price Target	Ceiling	Qty
AT&T, Greensboro, NC			
N00024-92-C-6316, CPAF	$26.6	$26.6	0
Award: September 30, 1992			
Definitized: N/A			

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$26.6	$26.6	0	$26.6	$26.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

To date the contractor has not initiated C/SCSC reporting because the contract has not been definitized.

Awarded contract to AT&T on 30 September 1992 to develop software for the AN/UYS-2 (EMSP) that allows its use in the AN/SQQ-89 in place of the AN/UYS-1. The contractor has no anticipated delays. Contract definitization is underway and is scheduled to be completed at the end of May 1993.

b.(U) Procurement --

(U) AN/SQQ-89 ASW COMBAT SYS:	Initial Contract Price		
	Target	Ceiling	Qty
General Electric, Syracuse, NY N00024-88-C-6219, FFP Award: July 1, 1988 Definitized: July 1, 1988	$276.9	N/A	14

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$605.8	N/A	18	$605.8	$605.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

All ship systems have been delivered with only stand-alone subsystem units, spares, and other small equipments remaining.

(U) AN/SQQ-89 ASW COMBAT SYS:	Initial Contract Price		
	Target	Ceiling	Qty
Westinghouse Electric Co., Sykesville, MD N00024-90-C-6013, FFP Award: June 1, 1990 Definitized: June 1, 1990	$177.6	N/A	7

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$202.3	N/A	7	$202.3	$202.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Westinghouse FY90 production under Contract N00024-90-C-6013 remains on schedule. Construction of the Production Test Facility (PTF) was completed, and the first system was delivered in December 1992.

(U) AN/SQQ-89 ASWCS:
General Electric Co., Syracuse, NY
N00024-91-C-6309, FFP
Award: February 15, 1991
Definitized: February 15, 1991

Initial Contract Price		
Target	Ceiling	Qty
$138.1	N/A	7

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$138.1	N/A	7	$138.1	$138.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

GE FY91 production under Contract N00024-91-C-6309 is well ahead of schedule. GE has delivered the first three systems over one year ahead of schedule, and it is expected that all system deliveries will be made by the end of August 1993.

(U) AN/SQQ-89 ASWCS:
Westinghouse Electric Co., Sykesville, MD
N00024-92-C-6300, FFP
Award: September 11, 1992
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$143.2	N/A	7

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$206.3	N/A	18	$206.3	$206.3

Explanation of Change:

15. (U) Contract Information (Cont'd):
Cost and Schedule variance reporting is not required on this FFP contract.

Westinghouse Electric Company (WEC) is currently on schedule for this single year contract with options for FY93-95. The first major system delivery is scheduled for August 1994. The contract was awarded on 11 September 1992 and the first option for FY93 was exercised on 23 February 1993.

(U) AIDS DEVELOPMENT:	Initial Contract Price Target	Ceiling	Qty
Diagnostic Retrieval Sys, Oakland, CA N00024-92-C-6308, CPIF/FFP Award: April 15, 1992 Definitized: N/A	$85.0	$85.0	38

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$85.0	$85.0	38	$85.0	$85.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

To date the contractor has not initiated C/SCSC reporting because the contract has not been definitized.

Awarded contract to develop an Integrated Display Station as an ECP to the existing AVP (AIDS) to DRS on 15 April 1992. The Statement of Work was restructured in September 1992 to reflect the change to develop an NDI/COTs-based system vice a fully contractor developed system. The final proposal was submitted in January 1993. Contract definitization for the system development effort is underway and is scheduled to be completed in May 1993.

Note: This contract consists of $20M RDT&E funds and $65M procurement funds.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 76.0% (19 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 89.4% ($3492.7 / $3907.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY75-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	962.6	24.9	17.2	24.3	1029.0
Procurement	2440.9	94.2	207.8	46.8	2789.7
MILCON	4.4	-	-	-	4.4
O&M	84.8	-	-	-	84.8
Total	3492.7	119.1	225.0	71.1	3907.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1975				16.4	8.7	8.7	8.7	10.9
1976				18.8	10.6	10.6	10.6	6.6
197T				7.0	4.1	4.1	4.1	2.9
1977				41.6	25.1	25.1	25.1	2.6
1978				57.9	37.6	37.6	37.6	6.8
1979				65.0	46.6	46.6	46.6	8.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1980				93.8	74.3	74.3	74.3	10.6
1981				81.2	70.2	70.2	70.2	10.6
1982				85.5	77.8	77.8	77.8	7.6
1983				94.5	89.9	89.9	89.9	4.9
1984				71.3	70.3	70.3	70.3	3.8
1985				60.4	61.4	61.4	61.4	3.4
1986				50.0	52.3	52.3	52.3	2.8
1987				35.9	38.6	38.6	38.6	2.7
1988				19.3	21.5	21.5	21.5	3.0
1989				14.6	16.9	16.9	16.9	4.2
1990				37.0	44.6	44.6	44.6	4.0
1991				96.1	120.1	119.2	77.9	4.3
1992				58.6	75.1	47.1	23.6	2.8
1993				12.9	16.9	13.5	0.8	2.4
1994				18.5	24.9			2.4
1995				12.5	17.2			2.3
1996				4.4	6.2			2.3
1997				4.2	6.1			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1998				4.1	6.0			2.2
1999				4.0	6.0			2.2
Subtot				1065.5	1029.0	930.3	852.8	

An RDT&E quantity is not applicable because a complete AN/SQQ-89 has never been procured using RDT&E funds. Total costs reflect the AN/SQQ-89 Program only. The AN/SQQ-89 Improved costs were reflected in the AN/SQY-1 SAR Report. The SQY-1 program was canceled in November 1991. Funds required to integrate EMSP in AN/SQQ-89 are reported in the AN/SQQ-89 SAR.

Appropriation: 1810 Other Procurement, Navy

1979			0.9	0.9	0.7	0.7	0.7	8.7
1980			2.4	2.7	2.3	2.3	2.3	10.6
1981			3.8	3.9	3.6	3.6	3.6	10.6
1982			33.4	39.4	37.6	37.5	36.8	7.6
1983	2	6.0	69.2	124.7	123.4	123.4	123.4	4.9
1984	7	10.9	152.5	264.8	269.7	269.7	269.7	3.8
1985	7	7.7	140.5	234.1	245.5	245.5	245.5	3.4
1986	11	5.9	134.6	216.0	234.4	234.4	234.4	2.8
1987	5	10.7	144.6	211.7	238.0	238.0	238.0	2.7

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1988	3	8.5	107.0	153.5	180.6	178.4	152.9	3.0
1989	4	14.6	107.1	194.6	237.6	233.7	206.4	4.2
1990	3	12.9	120.1	149.3	188.1	179.6	167.1	4.0
1991	2	63.5	116.7	216.3	277.6	257.1	160.1	4.3
1992	10	6.0	156.5	187.6	246.7	210.2	73.3	2.8
1993	10	2.3	94.5	115.3	155.1	81.1	2.0	2.4
1994	6	0.2	59.2	68.4	94.2			2.4
1995	5		110.1	147.6	207.8			2.3
1996				9.1	13.1			2.3
1997				13.6	20.0			2.2
1998				7.0	10.5			2.2
1999				2.1	3.2			2.2
Subtot	75	149.2	1553.1	2362.6	2789.7	2295.2	1916.2	

There are 9 variants of the AN/SQQ-89 currently being produced or supported in the fleet. A variant will be upgraded to another variant based on the addition of equipments/components. To avoid distortion of the number of AN/SQQ-89 systems in the Fleet, the quantity acquired with OPN funds is considered to be equal to the number of ships receiving an AN/SQQ-89, where some subsystem of the system are procured using OPN, plus shore systems and trainers. Ships, shore systems and trainers will receive several incremental upgrades over the program years to achieve AN/SQQ-89 capability. To

16c. (U) Program Funding Summary (Cont'd):
prevent duplicate counting, each ship, shore site or trainer is counted as having received an AN/SQQ-89 at the time it is upgraded to the final AN/SQQ-89 configuration. The number of AN/SRQ-4s, AN/SQQ-28s, AN/SQR-19s AN/SQS-53Cs and the individual subsystems contained in Other Component Programs, procured in the years prior to FY88, in RDT&E and OPN, is not included in the quantities total as it is subsumed by the AN/SQQ-89 program.

Appropriation: 1205 Military Construction, Navy

1982				2.6	2.5	2.5	2.5	7.6
1983				1.9	1.9	1.9	1.9	4.9
Subtot				4.5	4.4	4.4	4.4	

Appropriation: 1804 Operation and Maintenance, Navy

1984				1.2	1.2	1.2	1.2	3.8
1985				15.2	15.4	15.4	15.4	3.4
1986				15.8	16.6	16.6	16.6	2.8
1987				30.6	33.0	33.0	33.0	2.7
1988				11.0	12.2	12.2	12.2	3.0
1989				5.5	6.4	6.4	6.4	4.2
Subtot				79.3	84.8	84.8	84.8	
Grand Total	75	149.2	1553.1	3511.9	3907.9	3314.7	2858.2	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The attainment of the maximum economic production rate is limited by FMS.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	51.5	94.2	140.2	-42.7	+46.0
Procurement Qty	2	6	11	-4	+5
Proc. Unit Cost	25.750	15.700	12.745	+10.050	-2.955
FY 1995					
Procurement Cost	154.8	207.8	314.4	-53.0	+106.6
Procurement Qty	2	5	11	-3	+6
Proc. Unit Cost	77.400	41.560	28.582	+35.840	-12.978
Balance of Proc. (FY 1996 to Complete)		46.8		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	55/55

The AN/SQQ-89 ship systems are counted as being delivered when they are "certified", while trainers and shore sites are counted when they are delivered to the site. Additionally, trainers and shore sites are only included in the count if they are fleet operational systems. The delivery quantity includes those systems which were delivered prior to December 31, 1992. The balance to be delivered is 20.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

1. There is no antecedent system.

2. O&S costs for the AN/SQQ-89 are based upon 75 AN/SQQ-89 systems.

3. OPN O&S costs are for ECPs to the system and procurement of spares.

4. MPN O&S costs are for personnel required to operate and support

18a. (U) Operating and Support Costs (Cont'd):
the shipboard system.

5. O&M,N O&S costs are for laboratory and program office support in-service systems, field services, and equipment and software maintenance.

b. (U) Costs -- (FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per system	Avg Annual Cost Per N/A
O&M,N	1.2	N/A
OPN	0.3	N/A
MPN	0.7	N/A
Total	2.2	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	26.7	6.2	6.2	---	39.1
Total	26.7	6.2	6.2	---	39.1

The O&M,N cost category identifies interim support, logistics support, systems engineering, CETS, and depot maintenance support costs. It however, does not correlate to the O&M,N (FMP) costs previously reported in this report. Balance to complete is to be determined.

N-39 TOMAHAWK

93-068

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SELECTED ACQUISITION REPORT (SAR):DD-COMP(Q&A)823)
PROGRAM: TOMAHAWK (R/UGM-109)

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
RGM-109/UGM-109 (TOMAHAWK)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
Director, Cruise Missiles Project — RADM George F A Wagner
PEO Cruise Missiles Project And — Assigned: February 8, 1991
Unmanned Aerial Vehicles Joint Proj. — AV 222-7409 COMM 202-692-7409
Washington, DC 20361-1014

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604367N Project W1784
PE 0204229N Project W0545

No Security Objection to Open Publication
(AS AMENDED)
93-C-0463
MAY 28 1993
Office of the Chief of
Naval Operations Dept. of the Navy

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OASD(PA) DFOISR 93-C-722

4. (U) **Program Elements/Procurement Line Items (Cont'd):**

PROCUREMENT:
APPN 1810 ICN 33525000 (Navy)
APPN 1810 ICN 33525500 (Navy)
APPN 1810 ICN 33902000 (Navy)
APPN 1507 ICN 30210100 (Navy)
APPN 1507 ICN 30612000 (Navy)

5. (U) **Related Programs:**
Air-Launched and Ground-Launched Cruise Missiles (USAF); MK-41 Vertical Launching System; Harpoon Missile; OTH Targeting; SSN 21 Combat System Improvement; CG-47; DDG-51; DD-963; SSN-688; and SSN-637 Class Ships.

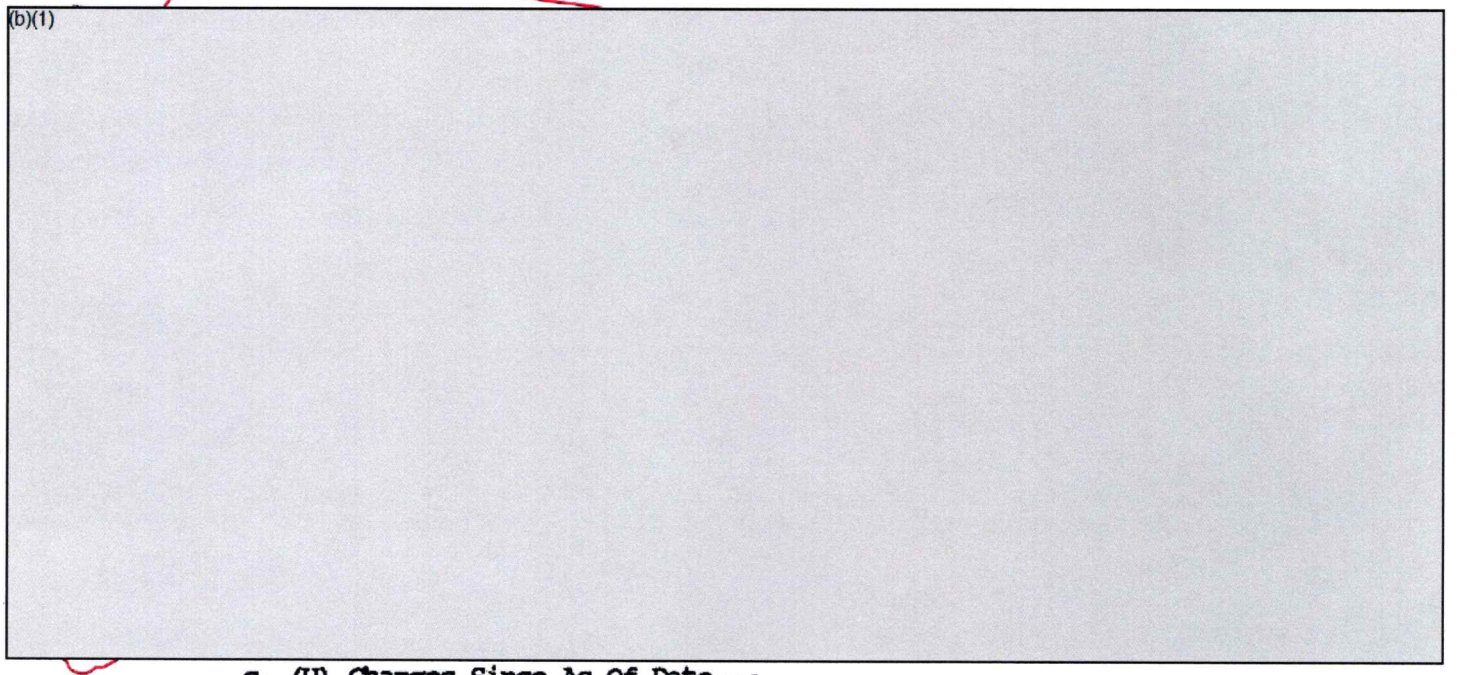
6. (U) **Mission and Description:**
The TOMAHAWK Land Attack Missile/Conventional (TLAM/C) variant counters threats against the U.S. Forces by destroying targets ashore, fleet command, control and logistic systems; industrial or other high value targets and ground-based air defense systems aiding aircraft penetration. The TOMAHAWK Anti-Ship Missile (TASM) redresses the current Commonwealth of Independent States (CIS) anti-ship cruise missile stand-off advantage and complements aircraft strikes against combat ships with effective air defense systems. The TOMAHAWK Land Attack Missile/Nuclear (TLAM/N) variant provides a highly survivable, world-wide theater nuclear capability. The TOMAHAWK program does not replace any existing weapon system.

7. (U) **Program Highlights:**

(b)(1)

)(1)

(b)(1)



c. (U) Changes Since As Of Date —

None.

8. (U) **Threshold Breaches:**
There are currently three cost Approved Program baseline breaches: 17 percent development, 9 percent procurement, and 40 percent military construction, all resulting from program expansions. A Program Deviation Report (PDR) and Acquisition Program Baseline Agreement (APBA) has been submitted for approval to add a new RDT&E upgrade expanded production, and increase magazine storage space. There are currently no performance or schedule breaches of the Acquisition Program Baseline (APB) (dated 12 February 1992). There are no NUNN-McCURDY unit cost breaches.

9. (U) **Schedule:**

a. (U) Milestones —	Development Estimate	Approved Program	Current Estimate
DSARC II			
Nuclear	JAN 77	JAN 77	JAN 77
Anti-Ship	JAN 77	JAN 77	JAN 77

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) —	Development Estimate	Approved Program	Current Estimate
First Full Scale Development (FSD)			
Flight			
Land Attack Nuclear	MAR 77	N/A	JAN 77
Anti-Ship	FEB 77	N/A	FEB 77
Combined DTOT/OPEVAL Complete			
Land Attack Conventional			
Block IIB (Sub)	JUL 87	JUN 87	MAY 88
Block IIB (Ship)	JUL 87	JUN 87	MAY 88
Block III	N/A	MAR 93	MAR 93
Anti-Ship (Sub)	MAY 80	N/A	OCT 83
Anti-Ship (Ship)	JAN 81	N/A	MAY 84
Land Attack Nuclear (Ship)	JAN 81	N/A	OCT 83
Land Attack Nuclear (Sub)	MAY 80	N/A	APR 84
NPDM			
Land Attack Dispenser	DEC 87	AUG 88	AUG 88
Anti-Ship (Sub)	SEP 80	N/A	DEC 84
Anti-Ship (Ship)	MAY 81	N/A	DEC 84
Land Attack Nuclear (Sub)	SEP 80	N/A	OCT 83
Land Attack Nuclear (Ship)	MAY 81	N/A	APR 84
IOC Complete			
Land Attack Conventional			
Block IIB (Sub)	SEP 87	SEP 88	SEP 88
Block IIB (Ship)	SEP 87	SEP 88	SEP 88
Block III AUR	N/A	MAR 93	MAR 93
TMPC(U)	N/A	MAR 93	MAY 93
APS	N/A	JUN 93	AUG 93
Anti-Ship (Sub)	JUN 81	N/A	NOV 83
Anti-Ship (Ship)	JUN 82	N/A	JUN 84
Land Attack Nuclear (Sub)	JAN 82	N/A	JUN 84
Land Attack Nuclear (Ship)	JUN 82	N/A	JUN 84

IOC Complete Threshold for TMPC(U) is Sep 93; APS Dec 93.

b. (U) Previous Change Explanations —

Conventional Dispenser Variant OPEVAL completion was delayed from 2/88 to 5/88 due to ship availability and delay in missile delivery due to hardware availability.

c. (U) Current Change Explanations —

IOC complete for Block III AUR, TMPC(U) and APS were added in the revised Acquisition Program Baseline, approved 12 February 1992.

9d. (U) Schedule (Cont'd):

d. (U) References —

(U) Development Estimate:
Draft DCP 125 dated Dec 22, 1976 (Land-Attack), Program Memorandum No. 117, Dec 22, 1976 (Anti-Ship) approved by SECNAV Jan 5, 1977; NDCP W0545 dated Aug 31, 1987 (Rev Aug 89), Annex B, (TOMAHAWK Weapons System) approved by OPNAV.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 12 February 1992.

10. (U) Performance Characteristics:

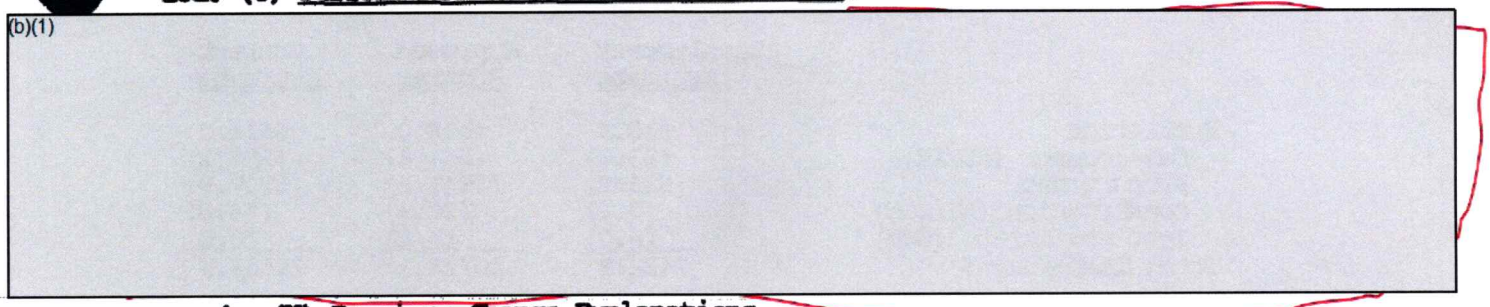
a. (U) Performance —

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

(b)(1)

10a. (U) Performance Characteristics (Cont'd):

(b)(1)



b. (U) Previous Change Explanations —

Changes are based on the aggregate results of on-going flight test demonstration capabilities of weapons systems. These changes were incorporated in the NAE approved Acquisition Program Baseline dated 12 Feb 92.

c. (U) Current Change Explanations —

CH 1 thru CH 20 is a result of incorporating the lastest flight test and storage data through December 1992.

d. (U) References —

(U) Development Estimate:
Draft DCP 125 dated Dec 22, 1976 (Land-Attack), Program Memorandum No. 117, Dec 22, 1976 (Anti-Ship) approved by SECNAV Jan 5, 1977; NDCP W0545 dated Aug 31, 1987, (Rev Aug 89), Annex B, (TOMAHAWK Weapons System) approved by OPNAV.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 12 February 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	782.8	1315.7	1548.9
Procurement	1023.6	3850.8	4214.3
Flyaway	(786.0)		(3359.9)
Other Weapon System	(90.2)		(629.4)
Peculiar Support	(81.1)		(119.1)
Initial Spares	(66.3)		(105.9)
Construction (MILCON)	0.0	23.6	33.1
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 77 Base-Year $	1806.4	5190.1	5796.3

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	616.5	5538.0	6636.0
Development (RDT&E)	(83.3)	(554.4)	(884.1)
Procurement	(533.2)	(4955.2)	(5707.9)
Construction (MILCON)	(0.0)	(28.4)	(44.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2422.9	10728.1	12432.3

Flyaway consists of only Air Vehicle (Flyaway). Other Weapon Systems consists of Other Launch/Fire Control Costs.

b. (U) Quantity —

Development (RDT&E)	81	81	74
Procurement	1082	4030	4568
Total	1163	4111	4642

Note: Excludes 81 RDTE prototypes from the SAR Baseline and 74 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs — None.

(b)(1) [redacted]

e. (U) References —

(U) Development Estimate:
Draft DCP 125 dated Dec 22, 1976 (Land-Attack), Program Memorandum No. 117, Dec 22, 1976 (Anti-Ship) approved by SECNAV Jan 5, 1977; NDCP W0545 dated Aug 31, 1987 (TOMAHAWK Weapons System) approved by OPNAV.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 12 February 1992.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	12432.3	11145.6	12432.3
(2) Quantity	4642	4122	4642
(3) Unit Cost	2.678	2.704	2.678
b. (U) Current Procurement —	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	486.6	486.6	318.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	486.6	486.6	318.0
(2) Quantity	200	200	216
(3) Unit Cost	2.433	2.433	1.472

Note: Unit cost calculations include dollars for remanufacture program, but not quantities.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	866.1	1556.8	0.0	2422.9
Previous Changes:				
Economic	-11.7	-1724.8	+1.4	-1735.1
Quantity	-22.6	+7744.0	-	+7721.4
Schedule	+211.6	-99.6	-	+112.0
Engineering	+820.5	+1523.2	-	+2343.7
Estimating	+7.0	-1541.4	+37.2	-1497.2
Other	-	-	-	-
Support	+2.9	+1774.5	+0.5	+1777.9
Subtotal	+1007.7	+7675.9	+39.1	+8722.7
Current Changes:				
Economic	-1.2	-42.5	+0.1	-43.6
Quantity	-	+670.1	-	+670.1
Schedule	-	+3.0	-	+3.0
Engineering	+599.6	+44.3	-	+643.9
Estimating	-39.2	+12.8	+37.9	+11.5
Other	-	-	-	-
Support	-	+1.8	-	+1.8
Subtotal	+559.2	+689.5	+38.0	+1286.7
Total Changes	+1566.9	+8365.4	+77.1	+10009.4
Current Estimate	2433.0	9922.2	77.1	12432.3

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1977 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	782.8	1023.6	0.0	1806.4
Previous Changes:				
Quantity	-17.5	+2678.5	-	+2661.0
Schedule	+148.5	-311.7	-	-163.2
Engineering	+409.4	+604.5	-	+1013.9
Estimating	-5.6	-764.1	+17.7	-752.0
Other	-	-	-	-
Support	+2.1	+716.3	+0.4	+718.8
Subtotal	+536.9	+2923.5	+18.1	+3478.5
Current Changes:				
Quantity	-	+223.4	-	+223.4
Schedule	-	-	-	-
Engineering	+244.8	+16.3	-	+261.1
Estimating	-15.6	+127.0	+15.0	+126.4
Other	-	-	-	-
Support	-	-99.5	-	-99.5
Subtotal	+229.2	+267.2	+15.0	+511.4
Total Changes	+766.1	+3190.7	+33.1	+3989.9
Current Estimate	1548.9	4214.3	33.1	5796.3

b. (U) Previous Change Explanations —

RDT&E
Economic: Revised escalation rates.
Quantity: Reduction of 7 missiles.
Schedule: Program delay to make design improvements, increase commonality, accelerate development of conventional land attack missile variant, and realign development of nuclear land attack. Theater Mission Planning Center IOC slip from FY90 to late FY91.
Engineering: Design changes for commonality with the Ground Launch Cruise Missile. Complete Tomahawk baseline program including BGM-109C. Establishment of Tomahawk Improvement Program. Implementation of

13b. (U) Cost Variance Analysis (Cont'd):

program restructuring including additions such as Submunition Dispenser, Terminal Maneuver, Improved Booster, Nuclear Safety, specific Weapon System block upgrades, Theater Mission Planning Center Upgrades. Block IIIB Overrun. Program years add-on. Revised Integrated Strike Planning System Requirement.

Estimating: Revised estimate to offset economic indicies. Addition of Theater Mission Planning System development caused by program restructuring. Revised program estimate.

Support: To fund the first surface ship fire control system trainer from RDT&E.

Procurement

Economic: Revised escalation rates.

Quantity: Reduction of fire control systems for 33 ships and 52 submarines. Establish Procurement objective of 3994 missiles. Quantity change of 36 missiles. Deletion of 400 missiles in FY94 from total program. Addition of 200 missiles to the program. Addition of 278 missiles in FY92 as Desert Storm replacements and deletion of 60 nuclear missiles in FY92.

Schedule: Delay first procurement from FY80 and FY81. Rephasing of 689 missiles from FY85-87 to FY88-92 and the Congressionally mandated rephasing of FY84 TASM's. Missile procurement schedule slip for affordability issues. Accelerate procurement of 400 missiles from FY93 into FY91/92. Rephase procurement of 564 missiles from FY91/FY92 into FY93-FY95. Realignment associated with Quantity changes in FY91 and FY92.

Engineering: Requirements to use Armored Boxed Launcher vice cannister launchers and production of 1,157 R/UGM-109D variants, vice R/UGM-109C versions. Remanufacturing program to Upgrade to Block III. Production incorporation of the -402 engine. Integrated Strike Planning system Costs for new program requirements.

Estimating: Congressionally mandated amortization of tooling and test equipment. Re-estimate of Quality Assurance requirements. Inclusion of both Systems Engineering/Integrating Agent and Principal Support Laboratory in FY85 and later years. Lower costs due to competition. Estimating reductions related to competitive contract awards and repricing. Expected multi-year contract savings. Revised

13b. (U) Cost Variance Analysis (Cont'd):

estimates of surface and submarine support equipment. FY89 competition savings. Reclassification of costs as inflation. Additional Non-recurring to support program stretch (FY93-FY97). New program year FY95/96/97 add-on for Weapon Control System Alts/Mods; Surface and Submarine System Engineering/Integrating Agents and special support equipment. DD1415 Reprogramming for Hurricane Hugo. Adjustments for miscellaneous non-technical items such as Defense Business Operations Fund relating to affordabililty issues. Additional 130 capsule launch systems. Theater Mission Planning Center Support reestimate. Afloat Planning System costs associated with new program requirements. Costs associated with additional Weapon Control System. Deferral of installation costs. Navy Below-Threshold-Reprogrammings related to affordability issues. Revised estimates of surface support costs. Reestimation of FY91 and FY92 requirements required by Quantity and Schedule changes.

Support: Support equipment and initial spares associated with missile quantity changes. Schedule rephasing of asociated missile support equipment, spares and Common Weapon Control System (CWCS) spares. Transfer of Theater Mission Planning Center (TMPC) support requirements from missile flyaway. Deletion of one AN/SWG-3. Reduction for initial spares. Peculiar Support equipment reestimate. Initial spares reestimate to support increased quantity and rephased procurement. Revised fleet support and spares requirements.

MILCON
Economic: Revised escalation rates.
Estimating: Economic Adjustment. Additional missile magazines. Revised project estimates.
Support: Revised project estimates.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.8

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.6
Congressional increase for engine (Engineering)	+1.3	+3.0
Tomahawk Baseline Improvement Program (Engineering)	+210.4	+516.6
Hard Target Penetrator (Engineering)	+33.1	+80.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.6
Adjustments for inflation and travel (pro-rata share) (Estimating)	-20.2	-49.6
Congr adjustment; TMPC (Estimating)	+5.4	+12.9
DBOF rate reduction (Estimating)	-1.9	-4.8
TMPCU/APS TSCM enhancements (Estimating)	+5.6	+13.4
SEIR (Estimating)	-4.8	-11.7
RDT&E Subtotal	+229.2	+559.2
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-90.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	+47.8
Total Variance associated with increase of 520 units.	+239.7	+714.4
Quantity Variance resulting from increase of 520 units. (Quantity)	+223.4	+670.1
Engineering Variance resulting from Quantity Allocation. (Engineering)	+16.3	+44.3
Change in procurement buy schedule. (Schedule)	—	+3.0
Adjustment for Current & Prior Inflation. (Estimating)	+12.9	+40.0
Adjustment for inflation and pricing (pro-rata share) (Estimating)	+53.6	+144.2
ILS Integrator Savings (Estimating)	-4.8	-17.5
Transfer Warfare/Eng Centers (Estimating)	—	+0.6
Economic Procurement/Mods Reprogramming (Estimating)	-36.8	-165.6
DBOF Prices (Estimating)	-1.1	-4.1
Spares Adjustment (Estimating)	+4.8	+20.2
ILS Integrator Savings (Estimating)	-2.3	-5.8
BSO Realignment (Estimating)	-0.4	-1.1

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Installation Annualization (Estimating)	-2.6	-5.9
DBOF Rate Reduction (Estimating)	-2.5	-6.2
Spares Adjustment (Estimating)	+5.8	+14.0
Adjustment for Current & Prior Inflation. (Support)	+0.9	+1.8
Correction to align flyaway and support costs (Support)	-100.4	—
Correction to align flyaway and support costs (Estimating)	+100.4	—
Procurement Subtotal	+267.2	+689.5
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	—	-0.1
Additional Missile Magazines (Estimating)	+15.0	+38.0
MILCON Subtotal	+15.0	+38.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.083	-0.387	0.390	0.011	0.505	-0.302	—	0.378	0.595	2.678

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement — (U) FY89 AUR:	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas, St. Louis, MO N00019-88-C-3128, FFP Award: April 7, 1988 Definitized: April 7, 1988	$239.0	N/A	206

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$267.0	N/A	254	$267.0	$267.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY91 AUR:
McDonnell Douglas, St. Louis, MO
N00019-91-C-0001, FFP
Award: January 30, 1991
Definitized: January 30, 1991

Initial Contract Price		
Target	Ceiling	Qty
$253.9	$0.0	240

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$381.6	$0.0	310	$381.6	$381.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY91 AUR:
General Dynamics, San Diego, CA
N00019-91-C-0002, FFP
Award: January 30, 1991
Definitized: January 30, 1991

Initial Contract Price		
Target	Ceiling	Qty
$188.6	$0.0	160

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$407.7	$0.0	368	$407.4	$407.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

(U) FY92 AUR:	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas, St Louis, MO N00019-92-C-0115, FFP Award: April 10, 1992 Definitized: April 10, 1992	$177.6	$0.0	114

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$177.6	$0.0	114	$177.6	$177.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY92 AUR:	Initial Contract Price Target	Ceiling	Qty
General Dynamics, San Diego, CA N00019-92-C-0116, FFP Award: April 10, 1992 Definitized: April 10, 1992	$161.0	$0.0	62

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$161.0	$0.0	62	$161.0	$161.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY90 AUR:	Initial Contract Price Target	Ceiling	Qty
General Dynamics, San Diego, CA N00019-89-C-0092, FFP Award: December 13, 1989 Definitized: December 13, 1989	$238.2	$0.0	280

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$238.2	$0.0	280	$238.2	$238.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 76.9% (20 yrs/26 yrs)

(2) Percent Program Cost Appropriated: 78.6% ($9777.2 / $12432.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY74-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1836.8	47.4	83.6	465.2	2433.0
Procurement	7901.3	318.0	341.5	1361.4	9922.2
MILCON	39.1	-	6.9	31.1	77.1
O&M	-	-	-	-	-
Total	9777.2	365.4	432.0	1857.7	12432.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1974				7.9	6.6	6.6	6.6	8.0
1975				40.9	37.3	37.3	37.3	10.9
1976				135.1	130.6	130.6	130.6	6.6
1977				115.3	119.2	119.2	119.2	2.6
1978				188.1	209.5	209.5	209.5	6.8
1979				125.3	154.1	154.1	154.1	8.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1980				77.5	105.4	105.4	105.4	10.6
1981				90.2	133.8	133.8	133.8	10.6
1982				92.4	144.3	144.3	144.3	7.6
1983				72.6	118.4	118.4	118.4	4.9
1984				79.9	135.0	135.0	135.0	3.8
1985				46.2	80.5	80.5	80.5	3.4
1986				41.2	73.9	73.9	73.9	2.8
1987				41.8	77.1	76.8	76.4	2.7
1988				36.4	69.5	69.4	66.1	3.0
1989				28.5	56.7	56.6	55.8	4.2
1990				23.1	47.9	47.9	46.8	4.0
1991				21.2	45.5	45.5	40.0	4.3
1992				27.7	60.9	59.7	28.4	2.8
1993				13.6	30.6	20.3	2.5	2.4
1994				20.6	47.4			2.4
1995				35.4	83.6			2.3
1996				57.0	137.4			2.3
1997				64.0	157.7			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1998				43.7	110.1			2.2
1999				23.3	60.0			2.2
Subtot	74			1548.9	2433.0	1824.8	1764.6	
Appropriation: 1507 Weapons Procurement, Navy								
1980	6	1.6	10.3	22.5	34.6	34.6	34.6	11.8
1981	50	13.8	83.8	100.1	171.7	171.7	171.7	11.6
1982	61	15.5	92.8	119.0	221.6	221.6	221.6	14.3
1983	51	14.1	84.1	111.2	219.0	219.0	219.0	9.0
1984	124	20.2	121.4	167.6	343.3	343.2	343.2	8.0
1985	180	32.2	192.7	266.2	561.2	561.2	561.2	3.4
1986	249	34.0	219.2	315.9	689.0	689.0	689.0	2.8
1987	324	42.2	281.5	324.0	732.2	732.2	718.8	2.7
1988	475	53.5	306.3	361.2	848.2	845.0	834.0	3.0
1989	510	123.5	157.6	281.3	686.6	685.4	685.4	4.2
1990	400	62.3	177.2	239.0	601.7	601.1	549.0	4.0
1991	678	38.6	319.6	415.0	1074.0	1059.7	681.3	4.3
1992	176	59.6	101.5	161.1	427.1	417.1	77.1	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1993	200	44.4	112.8	157.2	426.5	393.0	3.1	2.4
1994	216	22.1	69.3	91.4	253.8			2.4
1995	217	24.3	70.2	94.5	268.2			2.3
1996	217	23.5	67.1	90.6	262.7			2.3
1997	217	20.5	73.0	93.5	277.1			2.2
1998	217	19.4	106.5	125.9	381.6			2.2
1999		47.7		47.7	147.6			2.2
Subtot	4568	713.0	2646.9	3584.9	8627.7	6973.8	5789.0	
Appropriation: 1810 Other Procurement, Navy								
1981				22.3	35.0	35.0	35.0	10.6
1982				36.8	60.4	60.4	60.4	7.6
1983				74.7	127.1	127.1	127.1	4.9
1984				35.2	61.7	61.7	61.7	3.8
1985				44.2	79.8	79.8	78.0	3.4
1986				56.1	104.7	104.7	104.7	2.8
1987				54.7	105.8	105.8	104.2	2.7
1988				27.0	54.6	54.6	54.6	3.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1989				17.6	36.9	36.8	36.4	4.2
1990				26.0	55.8	54.8	42.3	4.0
1991				10.8	23.8	23.6	16.6	4.3
1992				26.0	58.9	47.9	27.6	2.8
1993				26.0	60.1	21.0	0.8	2.4
1994				27.1	64.2			2.4
1995				30.3	73.3			2.3
1996				31.3	77.4			2.3
1997				34.0	86.1			2.2
1998				27.3	70.7			2.2
1999				22.0	58.2			2.2
Subtot				629.4	1294.5	813.2	749.4	
Appropriation: 1205 Military Construction, Navy								
1982				0.3	0.5	0.5	0.5	7.6
1983								4.9
1984								3.8
1985								3.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1205 Military Construction, Navy (Cont'd)								
1986								2.8
1987				1.9	3.7	3.7	3.7	2.7
1988								3.0
1989				4.1	8.5	2.5		4.2
1990				2.1	4.6	2.4		4.0
1991				5.0	11.1	3.2		4.3
1992				4.7	10.7	4.1		2.8
1993								2.4
1994								2.4
1995				2.8	6.9			2.3
1996				6.5	16.3			2.3
1997				2.3	6.0			2.2
1998				3.4	8.8			2.2
1999								2.2
Subtot				33.1	77.1	16.4	4.2	
Grand Total	4642	713.0	2646.9	5796.3	12432.3	9628.2	8307.2	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The full-rate production baseline was approved in Acquisition Decision Memorandum (ADM) dated 7 July 1992, signed by the Secretary of the Navy.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum Economic	Min Sustain less CE	Max Econ less CE
FY 1994					
Procurement Cost	318.0	318.0	318.0	0.0	0.0
Procurement Qty	210	216	217	-6	+1
Proc. Unit Cost	1.514	1.472	1.465	+0.042	-0.007
FY 1995					
Procurement Cost	341.5	341.5	341.5	0.0	0.0
Procurement Qty	210	217	218	-7	+1
Proc. Unit Cost	1.626	1.574	1.567	+0.052	-0.007
Balance of Proc. (FY 1994 to Complete)	1361.4	2020.9	1361.4	-659.5	-659.5

c. (U) Deliveries (Plan/Actual) —

	To Date
RDT&E	74/74
Procurement	3042/3045

d. (U) Approved Design-to-Cost Objective — N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules —

The operating and Support costs are based on annual averages derived from a nine year period from FY90 through FY99. These costs are a summary of the FY94 Congressional Budget Submission.

The operational concept is a "Wooden round" which does not undergo maintenance except at the depot level. This maintenance cycle is known as a recertification and includes examination and replacement of time limited components. The recertification quantity is level at approximately 300 per year.

18a. (U) Operating and Support Costs (Cont'd):
An operational flight test program is conducted to determine operational readiness and aging effects of the deployed weapons system and provides fleet training. Operational flight tests are currently scheduled at the rate of 12 per year.

The software support activity include hardware and software maintenance for the operational flight system, the weapons fire control system, and independent validation and verification of the software.

Technical and Operations costs include life cycle management training, Naval Weapons station operations, integrated logistics support, and contractor engineering technical services.

Theater Mission Planning provides for the programming of Tomahawk missions and maintenance of hardware and software systems.

Platform maintenance is included for Tomahawk launch platforms at an approximate level of 146 platforms per year.

There is no antecedent system.

b. (U) Costs — (FY 1977 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Total system	Avg Annual Cost Per N/A
Operational Test Launch	9.9	N/A
Depot Maintenance	20.0	N/A
Software Support Program	7.8	N/A
Technical/Ops Support	9.5	N/A
Platform Maintenance	1.6	N/A
Theater Mission Planning	4.8	N/A
Total	53.6	N/A

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs — (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	32.6	5.1	5.3	23.2	66.2
Total	32.6	5.1	5.3	23.2	66.2

Operating and Support cost estimate date - 17 March 1992.

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A-7 BLACKHAWK

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: UH-60A/L BLACK HAWK

AS OF DATE: December 31, 1992

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MAY 25 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

21

1. **Designation and Nomenclature (Preferred Name):**
   UH-60A/L BLACK HAWK

2. **DoD Component:** Army

3. **Responsible Office and Telephone Number:**
   Utility Helicopters Project Mgr. Off COL Gerald Green
   ATTN: SFAE-AV-BH — Assigned: July 10, 1990
   4300 Goodfellow Blvd — AV 693-1700 COMM (314) 263-1700
   St. Louis, MO 63120-1798

4. **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 64206 Project D378, D189, D069
   PE 23744 Project D193
   PE 64217 Project DE70, D275
   PROCUREMENT:
   APPN 2031 ICN A05002 (Army)
   APPN 2031 ICN A09400 (Army)
   APPN 2031 ICN AA0005 (Army)
   APPN 2031 ICN AA0952 (Army)
   APPN 0350 ICN ------ (NGRE)
   MILCON:
   PE 22696, 22483, 22496, 85796

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5. Related Programs:
Army's EH-60A QUICK FIX, MH-60K Special Operations BLACK HAWK, UH-60A/L Flight Simulator, and AH-64 APACHE programs; Navy's SH-60B SEAHAWK and SH-60F (CV-HELO) programs; and Air Force's MH-60G PAVE HAWK program.

6. Mission and Description:
The BLACK HAWK is a twin engine helicopter that is used in the performance of the air assault, air cavalry, and aeromedical evacuation mission. This aircraft is sized as an infantry squad assault helicopter, capable of carrying up to 14 troops, but normally configured for a crew of 3 and 11 troops. It performs the missions of transporting troops and equipment into combat, resupplying the troops while in combat, and performing the associated functions of aeromedical evacuation, repositioning of reserves, and command and control. The UH-60L BLACK HAWK is continuing to replace the UH-1H Iroquois in air assault, air cavalry, and aeromedical evacuation units.

7. Program Highlights:
a. Significant Historical Developments --
On June 22, 1971 the BLACK HAWK program was approved by the DEPSECDEF for full-scale development. On March 6, 1972 a contract to develop a 1500 shaft horsepower advanced technology engine was awarded to General Electric Company (GE). August 30, 1972 contracts were awarded to Boeing Vertol and Sikorsky Aircraft to develop the BLACK HAWK airframe. Prototype qualification testing commenced October 17, 1974 and was completed December 8, 1976. These tests accumulated 2,990 flight test hours and 2,676 ground vehicle test hours. The BLACK HAWK was approved for production as a result of Defense Systems Acquisition Review Council (DSARC) III, held on November 30, 1976. On December 23, 1976, Sikorsky Aircraft and GE were awarded initial production contracts for airframes and engines, respectively. October 22, 1979--Army Systems Acquisition Review Council (ASARC) IIIA was held, at which time permission was granted for follow-on BLACK HAWK production.

May 15, 1979--FY80 HASC report 96-166 directed the Army to perform a UH-60A HELLFIRE feasibility demonstration. The demonstration was integrated with Army requirements for the UH-60A BLACK HAWK to carry external stores, such as fuel tanks, to meet self deployment and extended range needs--the External Stores Support System (ESSS) program. May 20, 1982--the HELLFIRE feasibility demonstration was satisfactorily completed. July 1, 1983--Development Testing II (DT II) of the ESSS was successfully completed. September 23, 1983--Operational Test II (OT II) was successfully completed at Ft. Campbell, KY. The DOD FY84 Authorization and Appropriation Acts directed the Army to qualify the HELLFIRE missile system on the UH-60A, and appropriated $15M to fund the program. Congress

7a. Program Highlights (Cont'd):

appropriated an additional $15.8M in the DOD FY86 Appropriation Act to complete qualification of the HELLFIRE missile system on the UH-60A. DT II for the UH-60A HELLFIRE Missile System was completed in November, 1987. The HELLFIRE system is qualified on the UH-60A and a Technical Data Package (TDP) has been procured for any future UH-60A HELLFIRE system procurement requirements.

The multiyear III airframe contract for FY88-91 to procure 252 UH-60's was fully executed with an additional 36 UH-60L procured in FY91, bringing the total contract quantity procured to 288 UH-60's. Congressional interest and subsequent funding in FY88 initiated an Army effort to develop an upgrade to the UH-60A, to include a composite rotor system, designated as the Multi-Stage Improvement Program (MSIP). Development of the MSIP was scheduled to conclude in 1992, with incorporporation of the changes on the production line (no retrofit of the fielded fleet was planned). After development contracts had been negotiated, however, the program was terminated due to insufficient resources in the outyear procurement program.

The procurement objective for the the UH-60 was increased from 1,107 to 2,253 in February, 1989, as stated in the Army Aviation Modernization Plan. The propulsion system for the UH-60 was changed from the T700-GE-700 to the T700-GE-701C in October, 1989, as the result of a competitive procurement of an engine with increased horsepower. With the incorporation of the T701C engine into the UH-60, the aircraft model designation was changed to the UH-60L. The significant improvement in performance of the UH-60L over the UH-60A eliminated all Material Need deficiencies except for the requirement for mission endurance.

b. Significant Developments Since Last Report --
An FY92-96 airframe multiyear contract for an additional 300 UH-60L aircraft was awarded in April, 1992. In FY 93, the quantity of 60 UH-60L's was divided by Congress, with 52 funded by the Army and 8 funded by the Army National Guard. The 8 UH-60L's for the National Guard were to be divided equally between Kansas and Hawaii.

A new medical configuration was proposed to improve the medical care capability of the UH-60L. The new series was designated as the UH-60Q, and a program to modify a UH-60A to the UH-60Q configuration began during FY92 (Proof of Principle) utilizing UH-60 production funds, with reimbursement from the Surgeon General.

The BLACK HAWK system is expected to satisfy the mission requirements.

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There is a MILCON cost breach to the AAE approved baseline, dated 26 February, 1990, for the UH-60A/L. There is a Program Acquisition Unit Cost Nunn-McCurdy breach.

The UH-60L meets all the critical mission performance thresholds, but falls slightly short of the mission endurance time specified in the Material Need as 2.3 hours. The decrease in mission endurance time is primarily due to the weight increase of the Improved Durability Main Gearbox and the 701C engines, coupled with a slight increase in specific fuel consumption.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
UH-60A			
Initial Production Contract Award (FY77)	N/A	DEC 76	DEC 76
Single Yr Contract Award (FY78)	N/A	OCT 77	OCT 77
Single Yr Contract Award (FY79)	N/A	OCT 78	OCT 78
Deliveries FY77 Contract Start	N/A	OCT 78	OCT 78
Deliveries FY78 Contract Start	N/A	MAY 79	MAY 79
FDT&E			
Start	N/A	JUL 79	JUL 79
Complete	N/A	OCT 79	OCT 79
MS IIIA	N/A	OCT 79	OCT 79
IOC	JUN 79	NOV 79	NOV 79
Single Yr Contract Award (FY80)	N/A	NOV 79	NOV 79
Deliveries FY79 Contract Start	N/A	AUG 80	AUG 80
Single Yr Contract Award (FY81)	N/A	DEC 80	DEC 80
Deliveries FY80 Contract Start	N/A	JUL 81	JUL 81
Deliveries FY81 Contract Start	N/A	MAR 82	MAR 82
Multiyear Contract Award (FY82-84)	N/A	APR 82	APR 82
Deliveries MYC 82-84 Start	N/A	DEC 82	DEC 82
Multiyear Contract Award (FY85-87)	N/A	OCT 84	OCT 84
Deliveries MYC 85-87 Start	N/A	MAR 85	MAR 85
Deployment Plan 1/	N/A		
36th Med - Ft Polk	N/A	DEC 86	DEC 86
5/17 Atk Hel Bn - Ft Hood	N/A	DEC 86	DEC 86
5/17 Atk Hel Bn - Ft Hood	N/A	FEB 87	FEB 87

9a. **Schedule (Cont'd):**

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
101st Av (Replacement) - Ft Campbell	N/A	MAR 87	MAR 87
82nd Av (Replacement) - Ft Bragg	N/A	MAR 87	MAR 87
228th Atk Bn - Ft Hood	N/A	MAR 87	MAR 87
82nd Av (Replacement) - Ft Bragg	N/A	APR 87	APR 87
247th med Det - Ft Irwin	N/A	APR 87	APR 87
9th LID (Replacement) - Ft Lewis	N/A	JUN 87	JUN 87
101st Av (Replement) Ft - Campbell	N/A	JUN 87	JUN 87
101st Av (Replacement) - Ft Campbell	N/A	SEP 87	SEP 87
82nd Av (Replacement) - Ft Bragg	N/A	SEP 87	SEP 87
VII Corps Atk Hel Bn - Ft Hood	N/A	SEP 87	SEP 87
101st Av (Replacement) - Ft Campbell	N/A	DEC 87	DEC 87
82nd Av (Replacement) - Ft. Bragg	N/A	DEC 87	DEC 87
VII Corps Atk Hel Bn - Ft Hood	N/A	DEC 87	DEC 87
3/227th AHB - Hanau, GE	N/A	FEB 89	APR 89
E/1st Aslt - Ft Riley	N/A	APR 89	FEB 89
1/245th Aslt - OKNG	N/A	APR 89	JUL 89
140th Aslt - CANG	N/A	MAY 89	MAY 89
1/24th AHB - Hunter/Ligget AAF	N/A	JUL 89	JUL 89
2/1st AHB - Ansbach, GE	N/A	OCT 89	JUL 89
Multiyear Airframe Contract Award (FY88-91)	N/A	JAN 88	JAN 88
Deliveries MYC 88-91 Start	N/A	JAN 88	JAN 88
H-60 Series Competitive Engine Contract Award	N/A	MAY 88	MAY 88
Multiyear Airframe Contract Award (FY89)	N/A	NOV 88	NOV 88
Approval of MSIP IPR by DA	N/A	MAR 89	N/A
Award MSIP Development Contract	N/A	APR 89	N/A
Award Composite Rotor System Development Contract	N/A	APR 89	N/A
MSIP/CRS Prelim Design Review	N/A	OCT 89	N/A
MSIP/CRS Critical Design Review	N/A	OCT 90	N/A
Initial Proc Objective (1107) Completed	N/A	JUN 91	JUL 91
First Year of Funding	JUL 67	N/A	JUL 67
Engine Develop Contract Award	DEC 71	N/A	MAR 72
Prototype Dev Contract Awards	SEP 72	N/A	AUG 72
First Flight	SEP 74	N/A	NOV 74

9a. **Schedule (Cont'd):**

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Engine Mil Qual Test (150 hrs)	DEC 75	N/A	MAR 76
Development Test II			
Started	FEB 76	N/A	MAR 76
Completed	DEC 77	N/A	DEC 76
Milestone III (DSARC)	SEP 76	N/A	NOV 76
UH-60L			
Multiyear Airframe Contract Award (FY88-91)	JAN 88	JAN 88	JAN 88
Multiyear Engine Contract Award (FY89-93)	NOV 88	NOV 88	NOV 88
Approval of Revised UH-60 Proc Obj (2253)	FEB 89	FEB 89	FEB 89
DA IPR for Type Class of UH-60L	SEP 89	SEP 89	SEP 89
Incorp of GE T701C Engine	OCT 89	OCT 89	OCT 89
Multiyear Airframe Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Engine Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Airframe Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Multiyear Engine Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Deployment Plan			
TXNG -- Austin, TX	NOV 89	NOV 89	NOV 89
2/229 Aslt -- Ft Rucker	JAN 90	JAN 90	JAN 90
1/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
4/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
3rd ACR -- Ft Bliss	APR 90	APR 90	APR 90
3/6 AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
1/3rd AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
C/25th Aslt -- Ft Drum	JUN 90	JUN 90	JUN 90
E/3 Aslt -- Ft Hood	JUN 90	JUN 90	JUN 90
1/4th AHB -- Ft Carson	JUL 90	JUL 90	JUL 90
1/5th AHB -- Ft Polk	SEP 90	SEP 90	SEP 90
SOCOM--Ft. Campbell, KY	N/A	N/A	AUG 90(Ch-1)
2-82nd Aslt--Ft. Bragg, NC	N/A	N/A	DEC 90(Ch-1)
E/149th Aslt TX ARNG--Austin, TX	N/A	N/A	FEB 91(Ch-1)
1-151 AHB SC ARNG--Eastover, SC	N/A	N/A	MAR 91(Ch-1)
1-111th AHB FL ARNG--Jacksonville, FL	N/A	N/A	APR 91(Ch-1)
1-207th Aslt AK ARNG-Ft.Richardson,AK	N/A	N/A	MAY 91(Ch-1)
MDW--Ft. Belvoir, VA	N/A	N/A	MAY 91(Ch-1)
1-149th AHB TX ARNG--Houston, TX	N/A	N/A	MAY 91(Ch-1)

9a. **Schedule (Cont'd):**

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
SOCOM--Ft. Campbell, KY	N/A	N/A	JUL 91(Ch-1)
E-130th AVIM NC ARNG--Salisbury, NC	N/A	N/A	APR 92(Ch-1)
E-131st AVIM AL ARNG--Birmingham, AL	N/A	N/A	JUN 92(Ch-1)
SOCOM--Ft. Campbell, KY	N/A	N/A	SEP 92(Ch-1)
1-17th Cav--Ft. Bragg, NC	N/A	N/A	NOV 92(Ch-1)
F-149th AVIM TX ARNG--Austin, TX	N/A	N/A	NOV 92(Ch-1)
101st Abn Div--Ft. Campbell, KY	N/A	N/A	DEC 93(Ch-1)
MY III Engine Contract Award(FY92)	N/A	N/A	JAN 92
MY IV Airframe Contract Award(FY92)	N/A	N/A	APR 92(Ch-2)
MY III Engine Contract Award(FY93)	N/A	N/A	NOV 92(Ch-1)
MY IV Airframe Award(FY93)	N/A	N/A	NOV 92(Ch-1)
MY III A/F Contract Deliveries Complete	N/A	N/A	SEP 93
MY IV Engine Contract Award(FY94)	N/A	N/A	NOV 93
MY IV Airframe Contract Award(FY94)	N/A	N/A	NOV 93

b. Previous Change Explanations --

Changes in the current estimate of milestone accomplishments have been caused by (a) conformance with the new Army Acquisition Guidelines; (b) reduction in prototype aircraft from 6 to 3; (c) time required to repair the prototype which was damaged in November 1975; (d) scheduling problems and additional time required by other Government agencies for testing; (e) the decision by DSARC III on initial production go ahead in December 1976; (f) the January 22, 1979 temporary grounding of the BLACK HAWK fleet because of the observance of a failure mode in a primary servo; (g) the June 11, 1979 official beginning of FDTE at Ft. Campbell, KY; (h) the October 15, 1979 completion of FDTE at Ft. Campbell, KY; (i) addition and subsequent termination of the Multistage Improvement Program (MSIP), and (k) minor changes to contract awards and aircraft deliveries and deployments.

c. Current Change Explanations --

(CH-1) Reflects addition of milestone since last submission
(CH-2) Current Estimate changed from Mar 92 to Apr 92

d. References --

Development Estimate:
UH-60A DCP #13, June 13, 1971 and DCP #13 Update, November 1, 1977.
UH-60L AAE approved baseline, dated February 26, 1990.

9d. Schedule (Cont'd):

Approved Program:
AAE Approved Acquisition Program Baseline dated 26 February 1990.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
UH-60A					
Payload					
Troops	11	11	/ 11	11	11
Pounds	2640	2640	/ 2640	2640	2640
Air Transportability					
C-130 (qty)	1	N/A	/ N/A	N/A	N/A
C-141 (qty)	2	2	/ 2	2	2
C-5 (qty)	6	6	/ 6	6	6
Flight Performance with Payload					
Vertical Rate of Climb (ft/min) 1/	500	450	/ 425	450	425
Cruise Speed (knots) 1/	150	145	/ 139	145	139
Endurance (hrs) 1/	2.3	2.3	/ 2.3	2.3	2.3
Mission Reliability					
Probability of Success	0.986	.991	/ .987	.991	.991
Mean Time Between Maint action (hrs)	70.9	106.0	/ 75.9	106.0	106.0
System MTBF (hrs)	4.0	4.0	/ 4.0	6.6	4.7
Maintenance Manhrs per Flight Hour (MMH/FH)	3.8	3.0	/ 3.0	3.0	3.0
UH-60L					
Payload (lbs)					
Troops	11	11	/ 11	11	11
Pounds	2640	2640	/ 2640	2640	2640
Air Transportability					
C-141 (qty)	N/A	2	/ 2	2	2
C-5 (qty)	N/A	6	/ 6	6	6
Flight Performance with Payload					
Vertical Rate of Climb (ft/min) 1/	785	900	/ 785	785	785
Cruise Speed (Knots) (using max cont power) 1/	150	152	/ 150	150	150

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Endurance (hrs) 1/	2.1	2.3	/ 2.1	2.1	2.1
Mission Reliability Probability of Success	N/A	.991	/ .987	.987	.987
Mean Time Between Maint Actions (hrs)	N/A	106.0	/ 75.9	75.9	75.9
System Mean Time Between Failures (hrs)	4.0	4.7	/ 4.0	4.0	4.0
Maintenance Manhrs per Flight Hour (MMH/FH)	3.8	3.0	/ 3.8	3.8	3.8

Notes:

The UH-60L is a derivative of the UH-60A. Approval for production incorporation was granted by a DA IPR for type classification--there is no Development Estimate.

Vertical Rate of Climb (VROC) in FPM is predicated on using 95% of Intermediate Rated Power (IRP).

Cruise Speed in Knots is based on using Maximum Continuous Power (MCP).

Endurance in Hours is based on using a mission profile.

Maintenance Man-hours per Flight Hour (MMH/FH) include inspection and servicing, total corrective MMH/FH, mission reconfiguration, preparation of aircraft for air transport, and refueling, through Aviation Intermediate Maintenance (AVIM) level.

The requirement for Air Transportability on a C-130 was approved for deletion from the program (TWX, DAMO-RQD, June 8, 1978).

Mission reliability is currently being measured in terms of Meantime Between Failure (MTBF) in hours. The value shown is equivalent to the value for probability of success.

b. Previous Change Explanations --

Variances in the demonstrated performance and current estimates of the operational/technical characteristics for the UH-60A are due to: (1) bands of acceptable performance which were identified to allow

10b. Performance Characteristics (Cont'd):
for cost effective trade-offs in the BLACK HAWK MN, ED October 1976; (2) weight growth due to design revisions and added capabilities have reduced the vertical rate of climb demonstrated performance from 664 to 425 feet per minute and have reduced the cruise speed to 139 knots; (3) system meantime between failure has improved from 4.3 to 4.7 based on sample data collected on Lot 9 (FY85) and newer UH-60A aircraft; (4) mission reliability improved from .980 to .991 with the associated meantime between mission abort in hours improving from an estimated 49.5 hours to the demonstrated value of 106.0 hours. These values are based on a mission reliability evaluation performed on Lot 12 (FY88) UH-60A aircraft during the period of Mar-Aug 1988.

c. Current Change Explanations -- None

d. References --

Development Estimate:
UH-60A DCP #13, June 13, 1971 and DCP # 13 Update, November 1, 1977.
UH-60L AAE approved baseline, dated February 26, 1990.

Approved Program:
AAE Approved Acquisition Program Baseline dated 26 February 1990.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	357.6	384.0	384.2
Procurement	1584.4	3899.6	3947.7
Airframe	(670.3)		(2560.4)
Engine	(176.5)		(629.4)
Avionics	(114.4)		(126.6)
Other Flyaway	(178.1)		(287.6)
Total Flyaway	(1139.3)		(3604.0)
Data	(28.8)		(46.7)
Training	(0.4)		(40.9)
Other			(34.4)
Total Other Wpn Sys	(29.2)		(122.0)
Peculiar Support	(58.9)		(21.8)
Initial Spares	(357.0)		(199.9)
Construction (MILCON)	0.0	7.1	8.3
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 71 Base-Year $	1942.0	4290.7	4340.2

11a. Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	365.3	11881.1	12005.7
Development (RDT&E)	(52.3)	(155.6)	(155.2)
Procurement	(313.0)	(11709.8)	(11831.0)
Construction (MILCON)	(0.0)	(15.7)	(19.5)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2307.3	16171.8	16345.9

The current program includes 156.0M appropriated to the National Guard for the procurement of 24 aircraft in FY91 and 56.0M appropriated to the National Guard in FY93 for the procurement of 8 aircraft.

b. Quantity --

Development (RDT&E)	0	N/A	0
Procurement	1107	2257	2248
Total	1107	2257	2248

Note: Excludes 16 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs --

UH-60L DESERT HAWK aircraft configured for a MEDEVAC mission.	8 Ea	$133.0M

d. Nuclear Costs -- None.

e. References --

Development Estimate:
UH-60A DCP #13, June 13, 1971 and DCP #13 Update, November 1, 1977.
Uh-60L AAE approved baseline, dated February 26, 1990.

Approved Program:
AAE Approved Acquisition Program Baseline dated 26 February 1990.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year JCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	16345.9	8685.8	16345.9
(2) Quantity	2248	1447	2248
(3) Unit Cost	7.271	6.003	7.271
b. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	419.5	419.5	419.1
Less CY Adv Proc	153.8	153.8	174.7
Plus PY Adv Proc	143.5	143.5	159.2
Net Total	409.2	409.2	403.6
(2) Quantity	60	60	60
(3) Unit Cost	6.820	6.820	6.727

The Current Procurement Unit Cost includes $56.0M appropriated to the National Guard for the procurement of 8 UH-60L aircraft.

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY71$)	4340.2	2860.2	4340.2
(2) Unit Cost	1.931	1.977	1.931
d. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (BY71$)	101.6	101.6	99.1
Less CY Adv Proc	37.2	37.2	41.3
Plus PY Adv Proc	35.8	35.8	38.7
Net Total	100.2	100.2	96.5
(2) Unit Cost	1.670	1.670	1.608

e. Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	1.268	21.12
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	801	55.36
(4) PAUC (BY71$)	-0.046	-2.33
(5) CPUC (BY71$)	0.000	N/A

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	1.268	21.12
(2) CPUC (TY$)	0.000	0.00
(3) PAUC Quantity	801	55.36
(4) PAUC (BY71$)	-0.046	-2.33
(5) CPUC (BY71$)	0.000	0.00

g. Initial SAR (DEC 71)
(1) Program Acquisition Cost (TY$) -- 2352.2
(2) Program Acquisition Cost (BY$) -- 1941.7

h. Unit Cost Changes.

(1) PAUC --

The breach is caused by a combination of the increased quantity of aircraft from 1447 to 2248 (55%), the procurement of those additional aircraft in a higher cost period(FY 1997-FY 2010), and the increased unit cost due to the reduction (from 72 A/C per year to 57 A/C per year) in production rate in the higher cost period.

(2) CPUC --

Current Procurement Unit Cost has not increased since FY93 funds were appropriated. The CPUC has actually decreased by 3.5% since the last SAR was submitted in December, 1991.

i. Impact of Performance or Schedule Changes on Unit Cost.

None of the performance or schedule milestones contained in the Program Baseline or the SAR are effected.

j. Program Management and Control.

Program Executive Officer: MG DeWitt T. Irby, Jr.
Deputy Program Executive Officer: Mr. Larry D. Holcomb

k. Cost Control Actions.

Attempts will be initiated to increase funding in FY96-99 to allow for production at a more economic production rate that will permit the continuation of multiyear contracting.

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

1. Contract Information (In Millions of Then-Year Dollars) --

(1) Contractor(s): UNITED TECHNOLOG CORP
(2) Contract Title: AIRFRAME MYP III FY88-91
(3) Contract Number:DAAJ09-88-C-A003
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): N/A
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) Explanation of Variances. -

This is a Firm Fixed Price contract. There is no cost reporting, and thus no cost or schedule variances. The only work remaining on this contract involves the conversion of the UH-60L to an MH-60K, and this effort is not part of the BLACK HAWK program.

(8) Impact of Variances on Contract. - None.

(9) Impact of Variances on Unit Costs. - None.

(1) Contractor(s): GENERAL ELECTRIC CO.
(2) Contract Title: Engine MYP III(FY89-93)
(3) Contract Number:DAAJ09-88-C-A084
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): N/A
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) Explanation of Variances. -

This is a Firm Fixed Price contract with no cost reporting, hence there are no cost or schedule variances. FY93 is the last year of funding on this contract, and the unit prices have actually declined, due to the application of the Economic Price Adjustment(EPA) clause

12. **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**
of the contract.

(8) Impact of Variances on Contract. - None.

(9) Impact of Variances on Unit Costs. - None.

(1) Contractor(s): United Technologies Corp.
(2) Contract Title: Airframe MYC IV(FY92-96)
(3) Contract Number:DAAJ09-92-C-A004
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): N/A
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/92	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) Explanation of Variances. -

This contract was not shown on the baseline SAR, since it was not signed until April, 1992.

(8) Impact of Variances on Contract. - None.

(9) Impact of Variances on Unit Costs. - None.

m. Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	409.9	1897.4	0.0	2307.3
Previous Changes:				
Economic	+52.4	+1572.3	+1.2	+1625.9
Quantity	-22.0	+904.6	-	+882.6
Schedule	+3.0	-46.0	-	-43.0
Engineering	+41.5	+147.6	+44.8	+233.9
Estimating	+23.2	+3417.4	-18.2	+3422.4
Other	+18.5	+1.4	-	+19.9
Support	+12.9	+223.9	-	+236.8
Subtotal	+129.5	+6221.2	+27.8	+6378.5
Current Changes:				
Economic	+0.1	-66.0	-0.5	-66.4
Quantity	-	+3022.8	-	+3022.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	+4279.5	+0.5	+4279.9
Other	-	-	-	-
Support	-	+423.8	-	+423.8
Subtotal	-	+7660.1	-	+7660.1
Total Changes	+129.5	+13881.3	+27.8	+14038.6
Current Estimate	539.4	15778.7	27.8	16345.9

13a. **Cost Variance Analysis (Cont'd):**

a. Summary (FY 1971 Constant (Base-Year) Dollars in Millions)

	RDT&E	PRO	MILCON	TOTAL
Development Estimate	357.6	1584.4	0.0	1942.0
Previous Changes:				
Quantity	-20.2	+262.6	-	+242.4
Schedule	+1.4	-100.5	-	-99.1
Engineering	+16.7	+25.0	+13.5	+55.2
Estimating	+8.3	+876.4	-5.3	+879.4
Other	+12.6	+0.8	-	+13.4
Support	+7.9	-181.0	-	-173.1
Subtotal	+26.7	+883.3	+8.2	+918.2
Current Changes:				
Quantity	-	+573.5	-	+573.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	+826.9	+0.1	+826.9
Other	-	-	-	-
Support	-	+79.6	-	+79.6
Subtotal	-0.1	+1480.0	+0.1	+1480.0
Total Changes	+26.6	+2363.3	+8.3	+2398.2
Current Estimate	384.2	3947.7	8.3	4340.2

b. Previous Change Explanations --

RDT&E

Economic: Revised Escalation Indices.

Quantity: Due to a reduction in the engines and the number of flying prototypes from 12 to 6.

Schedule: Due to decreases resulting from a Congressional reduction in FY75 and an OSD reduction in FY78, more than offset by increases from program rescheduling because of the 1975 Boeing-Vertol and 1978 Sikorsky Aircraft prototype accidents.

Engineering: Due to increases resulting from developing a prototype auxiliary fuel cell system and the addition of the External Stores Support System (ESSS) as well as a Solid State Flight Data

13b. **Cost Variance Analysis (Cont'd)**:

Recorder, offset by the deletion of the vertical instrument requirement.

Estimating: Due to increases from the extension of the airframe and engine maturity contrac s, addition of the Congressionally directed HELLFIRE qualification program, and the transfer of CIP from APA funding to RDT&E funding, partially offset by decreases resulting from reduced cost estimates based on data from contract negotiations, application of OSD generic historical inflation factors, and the provision of funds to the DIVADS program.

Other: Due to increases to overhaul/repair the Boeing-Vertol prototype damaged in the October, 1975 accident and to sustain the Development Program as a consequence of the Sikorsky Aircraft prototype damaged in the 1978 accident.

Support: Due to increases for providing engine and avionics representatives for support at the airframe contractor's site and the development of additional trainers (Cockpit Emergengcy Procedures Trainer and Command Instrument Systems Trainer), partially offset by decreases resulting from favorable cost performance on the Maturity Test, reduction in the number of overhauls during GCT, and reduced support associated with the reduction in the number of flying prototypes from 12 to 6.

Procurement

Economic: Revised Escalation Indicies.

Quantity: Due to the procurement of four aircraft for the Drug Enforcement Agency in FY 87, and an additional 336 aircraft over the period of FY91-1996, reflecting an increase in the procurement objective.

Schedule: Due to increases resulting from stretching the duration of the procurement program from FY77-85 to FY77-91, more than offset by decreases resulting from the increase in the quantity procured in FY77-FY79 from 85 to 200, an increase in the quantity procured in FY82-90 due to the cancellation of the SOTAS program, and an increase in the procurement quantity in FY85 from 78 to 86.

Engineering: Due to the addition of requirements for special mission aircraft as well as more stringent requirements for protection against Electromagnetic Environment (EME).

Estimating: Due to increases from changes in estimates as a result of the March 1974 design-to-cost review and

13b. Cost Variance Analysis (Cont'd):

independent parametric cost estimate and the December 1976 Source Selection Evaluation Board review, the addition of mission flexibility kits and aircraft survivability equipment, airframe production start-up problems, and application of system unique inflation indices to prior year costs, partially offset by decreases from revisions to the parametric estimating methodology, the transfer of PEP funding from procurement to RDT&E, reductions in the FY78 avionics initial spares requirement, revision of production estimates to reflect multiyear contracting on the airframe from FY82-91 and the engine from FY83-91, production acceleration during the FY82-84 timeframe, and a reduction in the projected procurement of mission kits as well as a reduction in the provision for engineering changes.

Other: Due to cost growth on the FY77 airframe production contract.

Support: Due to increases resulting from the requirement for additional engines for initial spares at an increased unit price, increased funding requirements for initial spares in subsequent years to accommodate an increased number of deployment sites and the carryover of funding shortfalls from earlier years, resumption of funding liability for Peculiar Ground Support Equipment (PGSE), increased technical data requirements, addition of flight simulator requirements to FY87 and beyond, additional requirements associated with the increase in the procurement quantity,and the transfer of PMO costs and total package fielding from another appropriation, partially offset by decreases resulting from the transfer of initial spares requirements for Army Stock Fund items from the PMO to the MSC, and reduced support requirements resulting from acceleration of production.

MILCON

Economic: Revised Escalation Indices.

Engineering: Due to the addition of construction funds required for UH-60 Flight Simulator facilities.

Estimating: Reduction in the number of flight simulator facilities as well a revision in the allocation of the cost of the facilities between aircraft programs.

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revision of historical inflation factors (Economic)		+0.1
Current and prior year inflation offset (Estimating)	-0.1	-0.1
RDT&E Subtotal	-0.1	--
(2) Procurement		
Revised Inflation Indices (Economic)		-66.0
Increase in aircraft procurement from 1,447 to 2,248 (Quantity)	+573.5	+3022.8
Current and prior year inflation offset (Estimating)	+5.2	+20.6
Estimating variance associated with additional aircraft buy (Estimating)	+821.7	+4258.9
Current and prior year inflation offset (Support)	+0.5	+2.0
Initial spares associated with additional aircraft (Support)	+30.0	+155.0
Training, data, and ground support equipment associated with additional aircraft (Support)	+23.3	+131.0
Other support cost associated with additional aircraft (Support)	+25.8	+135.8
Procurement Subtotal	+1480.0	+7660.1
(3) MILCON		
Revised escalation indices (Economic)		-0.5
Current and prior year inflation offset (Estimating)		+0.2
Revision to cost estimates (Estimating)	+0.1	+0.3
MILCON Subtotal	+0.1	--

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes							PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.084	0.694	0.679	-0.019	0.104	3.426	0.009	0.294	5.187	7.271

15. **Contract Information** (Then-Year Dollars in Millions):

a. Procurement --

AIRFRAME MYP III FY88-91:
UNITED TECHNOLOGY CORP, STRATFORD, CT
DAAJ09-88-C-A003, FFP
Award: N/A
Definitized: January 11, 1988

Initial Contract Price		
Target	Ceiling	Qty
$983.2	N/A	252

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$2013.8	N/A	387	$2013.8	$2013.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Engine MYP III(FY89-93):
GENERAL ELECTRIC CO., LYNN, MA
DAAJ09-88-C-A084, FFP
Award: N/A
Definitized: November 30, 1988

Initial Contract Price		
Target	Ceiling	Qty
$564.2	N/A	1156

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1032.6	N/A	2220	$1032.6	$1032.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. Contract Information (Cont'd):

Airframe MYC IV(FY92-96):	Initial Contract Price Target	Ceiling	Qty
United Technologies Corp., Stratford, CT DAAJ09-92-C-A004, FFP Award: N/A Definitized: April 28, 1992	$0.0	$0.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1571.9	N/A	305	$1571.9	$1571.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 60.5% (26 yrs/43 yrs)

(2) Percent Program Cost Appropriated: 46.5% ($7593.4 / $16345.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY68-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2010)	Total
RDT&E	539.4	-	-	-	539.4
Procurement	7036.7	419.1	398.5	7924.4	15778.7
MILCON	17.3	-	3.5	7.0	27.8
O&M	-	-	-	-	-
Total	7593.4	419.1	402.0	7931.4	16345.9

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1968				0.6	0.5	0.5	0.5	3.6
1969				1.9	1.8	1.8	1.8	4.7
1970				1.2	1.2	1.2	1.2	5.5
1971				7.7	7.9	7.9	7.9	5.2
1972			0.1	21.1	22.7	22.7	22.7	4.6
1973			7.8	44.8	50.3	50.3	50.3	4.3
1974			21.0	84.0	102.6	102.6	102.6	8.0
1975			6.5	39.2	52.7	52.7	52.7	10.9
1976			8.1	65.4	93.6	93.6	93.6	6.6
1977T			0.8	12.5	18.6	18.6	18.6	2.9
1977			3.9	50.4	76.0	76.0	76.0	2.6
1978			2.5	24.2	39.2	39.2	39.2	6.8
1979			0.6	6.3	11.4	11.4	11.4	8.4
1980			0.5	1.8	3.6	3.6	3.6	10.6
1981			0.7	3.2	7.0	7.0	7.0	10.6
1982			0.7	2.9	6.7	6.7	6.7	7.6
1983			0.4	3.8	9.1	9.1	9.1	4.9

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1984			0.5	6.0	15.0	14.8	14.8	3.8
1985								3.4
1986			0.1	6.0	15.9	15.9	15.9	2.8
1987				0.8	2.3	2.3	2.3	2.7
1988				0.2	0.7	0.7	0.6	3.0
1989				0.2	0.6	0.6	0.6	4.2
Subtot			54.2	384.2	539.4	539.2	539.1	
Appropriation: 2031 Aircraft Procurement, Army								
1977	15	19.6	37.8	75.3	140.6	140.6	140.6	3.7
1978	56	13.3	89.2	124.4	245.8	245.8	245.1	6.0
1979	92	6.4	140.6	168.9	395.6	392.8	392.8	12.0
1980	94	3.6	127.6	141.6	380.2	380.2	378.6	19.8
1981	80	2.1	109.8	149.5	478.0	478.0	478.0	13.5
1982	96	2.3	130.0	189.7	618.8	618.8	618.8	8.1
1983	96	8.0	138.1	168.6	540.6	540.6	540.6	-0.3
1984	84	1.3	121.8	125.4	389.6	389.6	389.6	1.7
1985	86	0.9	122.1	141.4	436.7	436.7	436.7	-0.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2031 Aircraft Procurement, Army (Cont'd)								
1986	78	1.4	109.1	133.9	411.5	411.5	411.5	-1.0
1987	82	3.6	119.3	124.2	380.8	380.3	375.3	0.2
1988	72	9.2	108.6	147.1	492.4	492.3	485.1	7.6
1989	72	3.3	110.6	127.6	473.2	472.9	443.9	10.8
1990	72	0.7	98.3	106.9	409.0	409.0	395.0	4.0
1991	48	4.4	69.0	40.8	161.0	148.9	90.9	4.3
1992	60	1.6	98.5	125.7	507.4	497.0	171.0	2.8
1993	52	0.9	75.5	88.0	363.5	264.8		2.4
1994	60	0.1	90.7	99.1	419.1			2.4
1995	60	0.1	94.2	92.2	398.5			2.3
1996	60	0.8	96.9	73.3	324.1			2.3
1997	36	0.1	66.5	69.2	312.4			2.2
1998	36	0.1	65.5	66.2	305.7			2.2
1999	52	0.1	90.7	94.5	445.8			2.2
2000	60	0.1	101.2	149.2	719.5			2.2
2001	60	0.1	104.0	116.9	575.9			2.2
2002	60	0.1	103.9	109.2	549.6			2.2
2003	60	0.1	103.8	99.5	512.1			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY71 Dollars Nonrec	Flyaway FY71 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2031 Aircraft Procurement, Army (Cont'd)								
2004	60	0.1	103.2	122.3	643.4			2.2
2005	60	0.1	103.3	112.5	604.5			2.2
2006	60	0.1	103.3	104.8	575.8			2.2
2007	60	0.1	103.2	95.4	535.8			2.2
2008	60	0.1	103.2	120.2	689.5			2.2
2009	60	0.1	103.3	111.7	655.0			2.2
2010	77	0.1	123.1	79.3	475.3			2.2
Subtot	2216	85.0	3465.9	3894.5	15566.7	6699.8	5993.5	
Appropriation: 2050 Military Construction, Army								
1987				3.1	9.4	9.4	9.4	2.7
1988				2.5	7.9	7.9	7.9	3.0
1989								4.2
1990								4.0
1991								4.3
1992								2.8
1993								2.4
1994								2.4

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2050 Military Construction, Army (Cont'd)								
1995				0.9	3.5			2.3
1996				1.8	7.0			2.3
Subtot				8.3	27.8	17.3	17.3	
Army	2216	85.0	3520.1	4287.0	16133.9	7256.3	6549.9	
Appropriation: 0350 National Guard & Reserve Equipm,Defense								
1991	24		39.5	39.6	156.0	154.7	122.1	4.3
1992								2.8
1993	8		13.6	13.6	56.0			2.4
Subtot	32		53.1	53.2	212.0	154.7	122.1	
DoD	32		53.1	53.2	212.0	154.7	122.1	
Grand Total	2248	85.0	3573.2	4340.2	16345.9	7411.0	6672.0	

17. **Production Rate Data:**

a. Production Baseline Rate

Milestone IIIA provided for a build up to a production rate of 180 aircraft per year.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	297.7	419.1	905.8	-121.4	+486.7
Procurement Qty	36	60	96	-24	+36
Proc. Unit Cost	8.269	6.985	9.435	+1.284	+2.450
FY 1995					
Procurement Cost	297.4	398.5	1088.4	-101.1	+689.9
Procurement Qty	36	60	144	-24	+84
Proc. Unit Cost	8.261	6.642	7.558	+1.619	+0.916
Balance of Proc. (FY 1996 to Complete)	11234.2	7924.4	5029.3	+3309.8	-2895.1

The unit procurement cost for the maximum economic production rate is greater than the unit price for the current program in FY94 and FY95, since funding includes advance procurement for a larger quantity in the succeeding year. In addition the current program reflects a larger credit per unit from prior year advance procurement funding.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	10/10
Procurement	1177/1164

d. Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 1107 - @ Peak Rate: 17.0/mo			
FY 72 Base-Year $	0.951	1.600	0.000
Then Year $	1.089	6.281	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 72 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

Uh-60A/L cost estimates are based on a flying hour rate of 18.2 hours per aircraft per month, with aircraft deployed in three representative units--a Combat Aviation Company, an Air Cavalry Troop(Air Cavalry Squadron), and a Medical Evacuation Company. Personnel cost includes the Pay and Allowances and Permanent Change of Station (MPA appropriation) for crew, maintenance, and support personnel attributable to the UH-60A/L BLACK HAWK in the aforementioned units. Consumption includes the cost of replenishment spares and repair parts, war reserve spares and repair parts, and petroleum, oil, and lubricants(POL). Depot maintenance includes the cost of labor, material, and transportation associated with the end item as well as component repair programs. Material modifications reflect the estimated hardware cost of aircraft changes installed after fielding. Other direct costs include the cost of civilian maintenance on the flight simulators, as well as the appliication of modifications with OLR teams. Other indirect costs include the cost of replacement training for military personnel, as well as the cost of quarters, maintenance, and utilities. The source of the O&S estimate is the Baseline Cost Estimate (BCE) dated July 1991. Assumptions and ground rules for the UH-1 (antecedent system) are the same as for the UH-60, except for a flying hour rate of 20 hours per aircraft per month and that the flight simulator maintenance as well as modification application are completed by military personnel. Source of the estimate is a 1987 study.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1971 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per 1,000 Flying Hours UH-60A/L BLACK HAWK	Avg Annual Cost Per 1,000 Flying Hours UH-1 Iroquois
Personnel	463.5	355.7
Consumption	237.3	130.2
Depot Maintenance	24.2	135.5
Modifications--Material	28.1	19.4
Other Direct Cost	66.6	0.0
Other Indirect Cost	95.3	153.9
Total	915.0	794.7

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Int. Contractor Spt.	---	---	---	---	---
Contractor Log. Spt.	---	---	---	---	---
Sust. Engineering	0.1	0.1	0.1	---	0.3
Depot Maintenance	17.3	9.7	7.2	---	34.2
Contract Eng/Tec Srv	1.8	1.0	1.0	---	3.8
Other	2.5	1.4	0.8	---	4.7
Total	21.7	12.2	9.1	---	43.0

Sustaining Engineering: DA/AMC directed initiative to assure the application of RCM logic to requirements.

18c. Operating and Support Costs (Cont'd):

Depot Maintenance:	Project to incorporate RCM strategy into the depot program which will provide the depot with the depth of work required to overhaul/ repair only those items/components requiring it.
Contract Eng/Tech Serv:	T700 engine engineering services necessary to provide timely and accurate resolution of of problems with fielded UH-60's utilizing the T700 engine. Full up engineering.
Other:	Program directly affects sustainment and update of Army Aviation maintenance, equipment design, operational readiness, and safety. Army oil analysis, deficiency reporting, and sample data collection, COSIS, ACE/OCM, and DMWR verification.

N-9 CG 47

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CG 47 AEGIS CRUISER

AS OF DATE: December 31, 1992

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1. (U) **Designation and Nomenclature (Preferred Name):**
CG 47 AEGIS Cruiser Class/Guided Missile Cruiser (AEGIS Cruiser)

2. (U) **DoD Component:** Navy

3. (U) **Responsible Office and Telephone Number:**
AEGIS PROGRAM MANAGER
2531 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22242-5165

RADM G.A. HUCHTING, USN
Assigned: August 2, 1991
AV 332-7395 COMM (703)-602-7395

CLEARED
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AS AMENDED
MAY 28 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. (U) **Program Elements/Procurement Line Items:**

PROCUREMENT:
APPN 1611 ICN 24292N (Navy)

5. (U) **Related Programs:**
DDG 51, SM-2 (MR), HARPOON, TOMAHAWK, PHALANX, MK-46, LAMPS MK-I/MK-III, VERTICAL LAUNCH, and VERTICAL LAUNCH ANTI-SUBMARINE ROCKET.

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MAY 27 1993

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6. (U) Mission and Description:
To destroy enemy aircraft, missiles, submarines, and surface ships in order to prohibit the employment of such forces against U.S. forces. CG 47 Class ships will normally be assigned to carrier battle groups or surface action groups. The design of the TICONDEROGA (CG 47) Class is based on the fleet-demonstrated hull and gas turbine propulsion system of the SPRUANCE (DD 963) Class. The combat system is based on the fleet-demonstrated armaments of the VIRGINIA (CGN 38) Class and eleven years at-sea operation in the AEGIS test ship, USS NORTON SOUND (AVM 1). With AEGIS, SM-2, HARPOON, TOMAHAWK, 5-inch guns, SEAHAWK helicopter, MK-46 torpedoes, anti-submarine rockets, Vertical Launch System (MK-26 Guided Missile Launch System CG-51 and prior), SQQ-89 ASW System, and advanced electronic systems, the CG 47 Class is the most heavily armed surface combatant constructed by the U.S. since World War II. Augmented by passive protection devices, including fragmentation protection of launchers and magazines, she provides operational commanders great flexibility.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The contract for the construction of the lead ship of the class, TICONDEROGA, was awarded to Litton Industries Ingalls Shipbuilding Division, Pascagoula, Mississippi in September 1978. Construction of the TICONDEROGA began in July 1979. She launched in April 1981: began acceptance trials in November 1982, was commissioned in January 1983 and completed Post Shakedown Availability in July 1983.

b. (U) Significant Developments Since Last Report --
The last three ships of the Cruiser Program were launched in 1992 - CG 71 in January, CG 72 in June, and CG 73 in November. Ship Custody Transfer occurred on three ships in 1992 - CG 68 in February, CG 67 in April, and CG 69 in September. Three ships were commissioned in 1992 - USS Shiloh (CG 67) in July, USS Anzio (CG 68) in May, and USS Vicksburg (CG 69) in May. With the commissioning of USS Vicksburg (CG 69) there are now twenty three AEGIS Cruisers in active service. This will be the Final SAR report on the CG-47 program as current total expenditures exceed the 90% threshold. The CG-47 program has satisfied all mission requirements.

c. (U) Changes Since As Of Date --
Ship Custody Transfer of the CG 70 occurred in March 1993.
Ship Custody Transfer of the CG 71 occurred in April 1993.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 31 Dec 88) breaches or Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
DSARC III	JAN 78	JAN 78	JAN 78
Ship Construction Contract Award (CG 47)	SEP 78	SEP 78	SEP 78
Launch TICONDEROGA (CG 47)	AUG 81	APR 81	APR 81
Ship Commissioning, TICONDEROGA (CG 47)	APR 83	JAN 83	JAN 83
Post Shakedown Availability (CG 47)	MAR 84	SEP 83	JUL 83
TICONDEROGA Deployed	N/A	OCT 83	OCT 83
Launch VINCENNES (CG 49)	N/A	JAN 84	JAN 84
Lay Keel BUNKER HILL (CG 52)	N/A	JAN 84	JAN 84
Ship Commissioning VINCENNES (CG 49)	N/A	JUL 85	JUL 85
Launch MOBILE BAY (CG 53)	N/A	AUG 85	AUG 85
Ship Christening THOMAS S. GATES (CG 51)	N/A	DEC 85	DEC 85
Ship Commissioning, VALLEY FORGE (CG 50)	N/A	JAN 86	JAN 86
Ship Commissioning, BUNKER HILL (CG 52)	N/A	SEP 86	SEP 86
Ship Commissioning, MOBILE BAY (CG 53)	N/A	FEB 87	FEB 87
Ship Commissioning, ANTIETAM (CG 54)	N/A	JUN 87	JUN 87
Ship Commissioning, THOMAS S. GATES (CG 51)	N/A	AUG 87	AUG 87
Ship Commissioning, LEYTE GULF (CG 55)	N/A	SEP 87	SEP 87
Ship Commissioning, SAN JACINTO (CG 56)	N/A	JAN 88	JAN 88
Ship Commissioning, LAKE CHAMPLAIN (CG 57)	N/A	JUL 88	AUG 88

b. (U) Previous Change Explanations --

The current estimate for the launch, commissioning and completion of post shakedown availability for CG 47 was revised based on the construction schedule.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
AEGIS DCP #16 Revision #2 and CG 47 Class Guided Missile Cruiser DCP #134 were approved 2 March 1978.

(U) Approved Program:
DAB Approved Acquisition Program Baseline dated 31 December 1988.

10. (U) **Performance Characteristics:**

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length (overall ft)	563	567	/ 567	567	567
Beam (ft)	55	55	/ 55	55	55
Draft Navigational (ft)	31.7	31.7	/ 31.7	31.7	31.7
Displacement (long tons)	9100	9600	/ 9600	10200	9600
Propulsion					
- Type	LM 2500	Gas TURB	/ Gas TURB	LM 2500	LM2500
- Horsepower (2 shafts)	80000	80000	/ 80000	80000	80000
Accomodations					
- Officers	33	33	/ 33	37	37
(w) - CPO's and Enlisted	327	342	/ 342	372	372

(b)(1)

10a. (U) Performance Characteristics (Cont'd):

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

The overall length of the TICONDEROGA (CG 47) was planned as 563 feet. All CG 47 Class Cruisers are constructed to 567 feet, the additional four feet is for the bulwark on the bow. 10,200 LT represents limiting displacement. Accommodations were increased beginning with CG 49 to support an increase in the Combat Systems. The Underwater Fire Control System, starting with CG 56, changed MK-116 to Mod 6 and AN/SQS-53A to AN/SQS-53B. Incorporation of the AN/SQR-19 was in CG 54 and beyond during construction. Incorporation of Seahawk was in CG 49 and beyond during construction. CG 47 and CG 48 are armed with Sea Sprites. ASROC is on CG 47 through CG 51. VLA replaces ASROC beginning with CG 52. Vertical Launch System MK 41 replaces MK 26 Mod 1 starting with CG 52. MK 15 Mod 2 Block I was approved for limited production in November 1985 with installation beginning on the FY86 ships. TOMAHAWK begins on CG 52. The AEGIS Weapon System changed from SPY-1A to SPY-1B (MK-7/Mod 5) starting with CG 59. Accommodations were increased to meet operating requirements.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
AEGIS DCP #16 Revision #2 and CG 47 Class Guided Missile Cruiser DCP #134 were approved 2 March 1978.

10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1988.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	55.5	68.2	68.2
Procurement	8958.2	14258.8	14029.0
Basic Ship Cost	(3440.3)		(5069.4)
AEGIS Weapon System	(2598.8)		(3362.6)
Other GFE	(1874.6)		(5004.4)
Other Sailaway Costs	(832.9)		(179.5)
OF/PD	(211.6)		(413.1)
Total Flyaway	(8958.2)		(14029.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	14.4	14.4
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 78 Base-Year $	9013.7	14341.4	14111.6
Escalation	5069.8	9729.5	9165.3
Development (RDT&E)	(1.8)	(7.9)	(7.9)
Procurement	(5068.0)	(9712.3)	(9148.1)
Construction (MILCON)	(0.0)	(9.3)	(9.3)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	14083.5	24070.9	23276.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	16	27	27
Total	16	27	27

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
AEGIS DCP #16 Revision #2 and CG 47 Class Guided Missile Cruiser DCP #134 were approved 2 March 1978.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1988.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	23276.9	23294.1	23276.9
(2) Quantity	27	27	27
(3) Unit Cost	862.11	862.74	862.11
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	93.3	93.3	16.5
Less CY Adv Proc	93.3	93.3	16.5
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

NOTE: The category "Less CY Adv Proc" includes $93.3 in FY 1993 and $16.5M in FY 1994 for Outfitting and Post Delivery.

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	57.3	14026.2	0.0	14083.5
Previous Changes:				
Economic	+1.8	-1161.6	-0.8	-1160.6
Quantity	-	+11739.0	-	+11739.0
Schedule	-	+435.4	-	+435.4
Engineering	+9.7	+970.9	-	+980.6
Estimating	+7.3	-3245.2	-	-3237.9
Other	-	-	-	-
Support	-	+429.6	+24.5	+454.1
Subtotal	+18.8	+9168.1	+23.7	+9210.6
Current Changes:				
Economic	-	-39.0	-	-39.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+451.4	-	+451.4
Other	-	-	-	-
Support	-	-429.6	-	-429.6
Subtotal	-	-17.2	-	-17.2
Total Changes	+18.8	+9150.9	+23.7	+9193.4
Current Estimate	76.1	23177.1	23.7	23276.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	55.5	8958.2	0.0	9013.7
Previous Changes:				
Quantity	-	+5491.4	-	+5491.4
Schedule	-	-2.6	-	-2.6
Engineering	+7.6	+564.3	-	+571.9
Estimating	+5.1	-1189.9	-	-1184.8
Other	-	-	-	-
Support	-	+193.9	+14.4	+208.3
Subtotal	+12.7	+5057.1	+14.4	+5084.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+207.6	-	+207.6
Other	-	-	-	-
Support	-	-193.9	-	-193.9
Subtotal	-	+13.7	-	+13.7
Total Changes	+12.7	+5070.8	+14.4	+5097.9
Current Estimate	68.2	14029.0	14.4	14111.6

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Engineering: HDF and SDMS design changes.
Estimating: Refinement of RDT&E estimates.

Procurement
Economic: Revised escalation indices.
Quantity: Addition of 11 cruisers.
Schedule: Procurement Profile compressed from 2-2-1 (FY88-90) to 5-0-0 (FY88-90).
Engineering: Engineering enhancements including introduction of the Vertical Launch System, the upgrade of the Underwater Fire Control System and the change in

13b. (U) Cost Variance Analysis (Cont'd):

the AEGIS Weapon System from SPY-1A to SPY-1B. Deletion of the Level IIA Collective Protection System.

Estimating: Refinement of procurement estimates, program buy out, and adjustment of outfitting and post delivery costs corresponding to program changes.

MILCON

Economic: Revised escalation indices.

Support: Funds for training and support sites.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised December 1992 economic escalation rates. (Economic)	N/A	-39.0
Revised estimates for all ship systems. (Estimating)	+6.3	+9.0
Adjustment of outfitting and post delivery cost estimates. (Estimating)	+7.4	+12.8
Reclassify prior year outfitting and post delivery from Support (Estimating)	+193.9	+429.6
Reclassify prior year outfitting and post delivery to Estimating (Support)	-193.9	-429.6
Procurement Subtotal	+13.7	-17.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
880.2	-44.4	76.2	16.1	36.3	-103.2	--	0.9	-18.1	862.1

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) CG 69/71-73 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
INGALLS SHIPBUILDING INC., PASCAGOULA, MS N00024-88-C-2034, FPI Award: February 25, 1988 Definitized: February 25, 1988	$769.1	$819.0	4

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$805.2	$862.1	4	$807.1	$806.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$26.4	$-21.5
Cumulative Variances To Date (01/31/93)	$-15.5	$-59.3
Net Change	$-41.9	$-37.8

Explanation of Change:

The deterioration in the cost variance is due to unfavorable labor performance in pipe, electrical, and hull fabrication departments. The negative schedule variance is driven by a lag in billing for materials.

Estimated price at completion incorporates anticipated change orders and undertarget estimates which are not included in the current contract target and ceiling price.

(U) CG 70 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
BATH IRON WORKS, BATH, ME N00024-88-C-2178, FPI Award: February 25, 1988 Definitized: February 25, 1988	$226.1	$242.3	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$237.1	$256.8	1	$258.3	$263.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-15.9	$-4.9
Cumulative Variances To Date (01/31/93)	$-23.1	$0.8
Net Change	$-7.2	$5.7

Explanation of Change:

15. (U) Contract Information (Cont'd):

The deterioration in the cost variance was due to labor hour overruns in the Pipe and Paint department.

Estimated price at completion incorporates anticipated change orders and overtarget estimates which are not included in the current contract target and ceiling price.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 94.1% (16 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 99.9% ($23260.4 / $23276.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	76.1	-	-	-	76.1
Procurement	23160.6	16.5	-	-	23177.1
MILCON	23.7	-	-	-	23.7
O&M	-	-	-	-	-
Total	23260.4	16.5	-	-	23276.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1978				39.4	39.4	39.4	39.4	6.8

15. (U) Contract Information (Cont'd):

The deterioration in the cost variance was due to labor hour overruns in the Pipe and Paint department.

Estimated price at completion incorporates anticipated change orders and overtarget estimates which are not included in the current contract target and ceiling price.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 94.1% (16 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 99.9% ($23260.4 / $23276.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	76.1	-	-	-	76.1
Procurement	23160.6	16.5	-	-	23177.1
MILCON	23.7	-	-	-	23.7
O&M	-	-	-	-	-
Total	23260.4	16.5	-	-	23276.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1978				39.4	39.4	39.4	39.4	6.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1979				10.0	10.8	10.8	10.8	8.4
1980				5.4	6.5	6.5	6.5	10.6
1981				3.4	4.5	4.5	4.5	10.6
1982				5.0	7.2	7.2	7.2	7.6
1983				2.1	3.1	3.1	3.1	4.9
1984				1.0	1.5	1.5	1.5	3.8
1985				1.0	1.6	1.6	1.6	3.4
1986				0.6	1.0	1.0	1.0	2.8
1987				0.3	0.5	0.5	0.5	2.7
Subtot				68.2	76.1	76.1	76.1	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1978	1		663.3	663.3	923.1	923.1	913.4	8.2
1979					1.7	1.7	1.7	9.6
1980	1		494.7	494.7	791.9	791.9	763.9	9.9
1981	2		1012.2	1012.2	1782.1	1782.1	1726.2	9.6
1982	3		1767.3	1767.3	2695.7	2695.7	2604.5	7.5
1983	3		1502.0	1502.0	2392.7	2392.7	2311.8	3.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1984	3		1655.0	1655.0	2703.6	2703.6	2607.8	3.6
1985	3		1501.8	1501.8	2583.1	2583.1	2473.8	2.1
1986	3		1445.6	1445.6	2414.1	2405.6	2267.1	1.1
1987	3		1527.8	1527.8	2561.7	2522.2	2332.4	1.5
1988	5		2234.8	2234.8	3936.0	3706.2	3028.8	2.3
1989			30.3	30.3	51.0	45.8	44.8	2.8
1990			37.1	37.1	63.3	62.7	55.8	1.3
1991			47.5	47.5	82.0	61.4	56.0	1.3
1992			48.6	48.6	85.3	75.1	44.1	1.7
1993			52.0	52.0	93.3	16.4	1.0	2.4
1994			9.0	9.0	16.5			2.4
Subtot	27		14029.0	14029.0	23177.1	22769.3	21233.1	
Appropriation: 1205 Military Construction, Navy								
1982				1.2	1.9	1.9	1.9	7.6
1983				6.8	10.8	10.8	10.8	4.9
1984				2.6	4.2	4.2	4.2	3.8
1985								

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1986								
1987				3.8	6.8	6.8	6.8	2.7
Subtot				14.4	23.7	23.7	23.7	
Grand Total	27		14029.0	14111.6	23276.9	22869.1	21332.9	

17. (U) **Production Rate Data:**

a. (U) Production Baseline Rate

Not required for programs that produce at a rate less then six items per year.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	16.5	0.0	-16.5	-16.5
Procurement Qty	0	0		0	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

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17c. (U) **Production Rate Data (Cont'd)**:

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	23/23

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 0 - @ Peak Rate: 0.0/mo			
FY 78 Base-Year $	540.000	525.380	0.000
Then Year $	864.800	849.487	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 78 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

Approved Design to Cost Goal -- The CG 47 production estimate is based on average follow ship's unit procurement cost for 15 ships as approved by DCP #134, dated 2 March 1978. This goal is based upon the execution of the procurement plan shown in DCP #134 and does not include the cost of LAMPS aircraft, expendable shipfill ordnances, ship design, or outfitting and post delivery costs. The current estimate is the average unit procurement cost computed on ships 2 through 16 in th FYDP estimate.

18. (U) **Operating and Support Costs**:

a. (U) Assumptions and Ground Rules --

None.

b. (U) Costs -- None.

18c. (U) **Operating and Support Costs (Cont'd):**

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	32.8	17.7	---	---	50.5
Industrial Fund	---	---	---	---	---
Total	32.8	17.7	---	---	50.5

18c. Contractor Support Costs -- The Contractor Support Costs are combined costs for both the CG 47 AEGIS Class Cruiser and DDG 51 Class Destroyer programs.

A-11 CVN 68 CLASS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CVN-68 Class

AS OF DATE: December 31, 1992

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1. (U) **Designation and Nomenclature (Preferred Name):**
CVN-68 Class/Carrier Replacement Program (Nuclear Aircraft Carriers)

2. (U) **DoD Component:** Navy

3. (U) **Responsible Office and Telephone Number:**
Aircraft Carrier Program
Naval Sea System Command (PMS-312)
Washington, DC 20362-5101
Capt. Roland B. Knapp
Assigned: April 20, 1990
AV 332-7280 COMM (703) 602-7280

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604567N
PE 0605567N Project S1803
PROCUREMENT:
APPN 1611 ICN 32200100 (Navy)

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FOR OPEN PUBLICATION
AS AMENDED
MAY 27 1993 2
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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5. (U) Related Programs:
SSN new construction, submarine and carrier overhauls

6. (U) Mission and Description:
Nuclear Aircraft Carriers (CVN 68 CLASS) support and operate aircraft to engage in attacks on targets afloat and ashore which threaten our use of the sea and to engage in sustained operations in support of other forces. These ships have two nuclear reactors and nuclear fuel for at least 15 years of normal carrier operations, the equivalent of 11 million barrels of propulsion fuel oil. Speeds of over 30 knots were achieved during NIMITZ (CVN 68) trials. The ship's overall length is 1,092 feet with an extreme breadth of 252 feet. Combat load displacement is approximately 97,000 tons. The flight deck area is about 4.5 acres. The ship has four propellers, four aircraft elevators, and four catapults. The CVN 68 Class is expected to meet all its mission requirements.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
Construction of the CVN 68 Class aircraft carriers began in October 1967 with the start of the NIMITZ (CVN 68). To date five ships have been delivered. The USS NIMITZ (CVN 68), USS DWIGHT D. EISENHOWER (CVN 69), USS CARL VINSON (CVN 70), USS THEODORE ROOSEVELT (CVN 71), AND USS ABRAHAM LINCOLN (CVN 72),USS GEORGE WASHINGTON (CVN 73) were delivered in 1975, 1977, 1982, 1986, 1989, and 1992 respectively. There are two ships currently under construction at Newport News Shipbuilding the JOHN C. STENNIS (CVN 74) and the UNITED STATES (CVN 75). The CVN 74 construction began in November 1988. Target delivery date is December 1995 and contract delivery date is June 1996. CVN 75 construction began in April 1989 and contract delivery date is June 1998.

b. (U) Significant Developments Since Last Report --
A program increase for the CVN 74/75 program for an overtarget amount of $256.2M and an increase of $5.2M for change orders was submitted and approved by Congress. The CVN 73 was delivered on 15 June 1992. A program baseline change was approved for CVN 74/75 and CVN 76 programs.

c. (U) Changes Since As Of Date --
There have been no changes since the "as of" date.

8. (U) Threshold Breaches:
There are no breaches to Acquisition Program Baseline (APB) dated 2 October 1992 and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:
CVN-74/75

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
CVN-74			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 88	OCT 88
Lay Keel	OCT 91	DEC 90	MAR 91
Launch	JAN 94	DEC 93	NOV 93(Ch-1)
Target Delivery	N/A	DEC 95	DEC 95
Contract Delivery	SEP 96	JUN 96	JUN 96
CVN-75			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 89	APR 89
Lay Keel	APR 93	NOV 93	NOV 93
Launch	JUL 96	SEP 96	SEP 96
Delivery	SEP 97	JUN 98	JUN 98

b. (U) Previous Change Explanations --

CVN-74/75 dates reflect schedule IAW contract award on 6/30/88. CVN 74 actual start production date was October 1988 vice November 1988. CVN 74 keel laying was shifted from December 1990 to March 1991 at the request of the shipbuilder. CVN 75 actual start production date was changed from November 1989 to April 1989. The CVN 75 keel laying date was changed to November 1993(from August 1992) and CVN 75 launching to September 1996(from December 1995). This was made as a result of lessons learned on the CVN 72/73 and will result in improved construction efficiency. The contract delivery date of 30 June 1998 will not be affected.

c. (U) Current Change Explanations --

(CH-1) This change makes the CVN 74 launch date concurrent with the CVN 75 keel laying where the shipbuilder will lay the keel of CVN 75 in the same drydock after the CVN 74 is launched.

d. (U) References --

(U) Production Estimate:
Defense Appropriation Act of 1988.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 02 October 1992.

9d. (U) Schedule (Cont'd):
CVN-76

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
CVN-76			
Contract Award	JUN 95	JUN 95	DEC 94(Ch-2)
Start Production	NOV 95	NOV 95	NOV 95
Lay Keel	DEC 97	DEC 97	DEC 97
Launch	DEC 00	DEC 00	DEC 00
Delivery	DEC 02	DEC 02	DEC 02

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(CH-2) Revised estimate for ship award.

d. (U) References --

(U) Production Estimate:
The FY 1992 President's Budget.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 02 October 1992.

CVN-77

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
CVN 77			
Definitization of Contracts	JUN 01	N/A	DEC 00(Ch-3)
Start Production	NOV 01	N/A	NOV 01(Ch-3)
Lay Keel	DEC 03	N/A	DEC 03(Ch-3)
Launch	DEC 06	N/A	DEC 06(Ch-3)
Delivery	DEC 08	N/A	DEC 08(Ch-3)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-3) These dates identify the initial schedule for CVN 77.

9d. (U) Schedule (Cont'd):
CVN-77

d. (U) References --

(U) Production Estimate:
FY 1994 President's Budget dated 8 April 1993.

(U) Approved Program: None.

10. (U) Performance Characteristics:
CVN-74/75

a. (U) Performance --	PdR	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Length Overall	1092	1092 / 1092	1092	1092
Beam	134	134 / 134	134	134
Maximum Width	252	252 / 252	252	252
Draft (Combat Load) (ft)	38.4	39.0 / 40.4	40.4	38.9
Displacement (tons)	96300	99000 / 102500	102500	97337

(b)(1)

[redacted]

10a. (U) **Performance Characteristics (Cont'd):**

CVN-74/75

3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156.

b. (U) Previous Change Explanations --

CVN 74/75 projected crew size at delivery was reduced from 6,280 to 6,048 to reflect 122 accommodations which have been converted to training spaces and 110 accommodations were deleted to accommodate the Versitle Avionics System Test (VAST) equipment. The draft was changed from 38.4 to 38.9 and the displacement was changed from 96,300 to 97,337 to reflect re-evaluated torpedo side protection requirements. This re-evaluation permits an increase in draft and displacement limits while still obtaining the same torpedo side protection capability.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
Defense Appropriation Act of 1988.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 02 October 1992.

CVN-76

a. (U) Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length Overall	1092	1092	/ 1092	1092	1092
Beam	134	134	/ 134	134	134
Maximum Width	252	252	/ 252	252	252
Draft (Combat Load) (ft)	38.4	39.0	/ 40.4	40.4	38.9
Displacement (tons)	96300	99000	/ 102500	102500	97337

(b)(1) [redacted]

10a. (U) Performance Characteristics (Cont'd):
CVN-76

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations --

CVN 76 projected crew size at delivery was reduced from 6,280 to 6,048 to reflect 122 accommodations which have been converted to training spaces and 110 accommodations were deleted to accommodate the Versitle Avionics System Test (VAST) equipment. The draft was changed from 38.4 to 38.9 and the displacement was changed from 96,300 to 97,337 to reflect re-evaluated torpedo side protection requirements. This re-evaluation permits an increase in draft and displacement limits while still obtaining the same torpedo side protection capability.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
The FY 1992 President's Budget.

10d. (U) Performance Characteristics (Cont'd):
CVN-76

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 02 October 1992.

CVN-77

a. (U) Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length Overall	1092	N/A	/ N/A	1092	1092
Beam	134	N/A	/ N/A	134	134
Maximum Width	252	N/A	/ N/A	252	252
Draft (Combat Load) (ft)	39.0	N/A	/ N/A	40.4	40.4
Displacement (tons)	99000	N/A	/ N/A	102500	97337

(b)(1)

[redacted]

10b. (U) Performance Characteristics (Cont'd):
CVN-77

b. (U) Previous Change Explanations -- None Initial SAR.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
FY 1994 President's Budget dated 8 April 1993.

(U) Approved Program: None.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
CVN-74/75

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	5911.0	6528.4	6430.5
Basic	(3744.9)		(4097.3)
Government Furnished Equipment	(1998.1)		(2186.0)
Other Costs	(28.1)		(30.9)
OF/PD	(139.9)		(116.3)
Total Sailaway	(5911.0)		(6430.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	5911.0	6528.4	6430.5
Escalation	1055.0	576.9	419.6
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(1055.0)	(576.9)	(419.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6966.0	7105.3	6850.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	2	2	2
Total	2	2	2

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- $1,165.0M

11e. (U) Total Program Cost and Quantity (Cont'd):
CVN-74/75

e. (U) References --

(U) Production Estimate:
Defense Appropriation Act of 1988.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 02 October 1992.

CVN-76

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	48.1	48.1	39.7
Procurement	3862.7	4488.6	4246.0
Basic	(2458.7)		(2704.6)
Government Furnished Equipment	(1311.7)		(1442.9)
Other	(18.6)		(20.4)
OF/PD	(73.7)		(78.1)
Total Sailaway	(3862.7)		(4246.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 95 Base-Year $	3910.8	4536.7	4285.7
Escalation	386.4	433.2	283.3
Development (RDT&E)	(-1.1)	(-1.1)	(-1.1)
Procurement	(387.5)	(434.3)	(284.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	4297.2	4969.9	4569.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- $988.1M

11e. (U) Total Program Cost and Quantity (Cont'd):
CVN-76

e. (U) References --

(U) Production Estimate:
The FY 1992 President's Budget.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 02 October 1992.

CVN-77

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	4557.1	0.0	4557.1
Basic	(2901.1)		(2901.1)
Government Furnished Equipment	(1547.8)		(1547.8)
Other Costs	(21.9)		(21.9)
OF/PD	(86.3)		(86.3)
Total Sailaway	(4557.1)		(4557.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 95 Base-Year $	4557.1	0.0	4557.1
Escalation	983.7	0.0	983.7
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(983.7)	(0.0)	(983.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	5540.8	0.0	5540.8
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	1	N/A	1
Total	1	N/A	1

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- $1185.8M

11e. (U) Total Program Cost and Quantity (Cont'd):
CVN-77

e. (U) References --

(U) Production Estimate:
FY 1994 President's Budget dated 8 April 1993.

(U) Approved Program: None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

CVN-74/75

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6850.1	6602.0	6850.1
(2) Quantity	2	2	2
(3) Unit Cost	3425.05	3301.00	3425.05
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	6.3	6.3	11.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	6.3	6.3	11.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

CVN-76

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	4569.0	4199.2	4569.0
(2) Quantity	1	1	1
(3) Unit Cost	4569.00	4199.20	4569.00

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

CVN-76

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	829.4	829.4	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	829.4	829.4	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

CVN-77

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	5540.8	5540.8	5540.8
(2) Quantity	1	1	1
(3) Unit Cost	5540.80	5540.80	5540.80
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity			
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:
CVN-74/75

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	6966.0	0.0	6966.0
Previous Changes:				
Economic	-	-134.2	-	-134.2
Quantity	-	-	-	-
Schedule	-	-644.4	-	-644.4
Engineering	-	-	-	-
Estimating	-	+245.0	-	+245.0
Other	-	-	-	-
Support	-	+169.6	-	+169.6
Subtotal	-	-364.0	-	-364.0
Current Changes:				
Economic	-	-52.1	-	-52.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+469.8	-	+469.8
Other	-	-	-	-
Support	-	-169.6	-	-169.6
Subtotal	-	+248.1	-	+248.1
Total Changes	-	-115.9	-	-115.9
Current Estimate	-	6850.1	-	6850.1

13a. (U) Cost Variance Analysis (Cont'd):
CVN-74/75

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	5911.0	0.0	5911.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-124.1	-	-124.1
Engineering	-	-	-	-
Estimating	-	+218.1	-	+218.1
Other	-	-	-	-
Support	-	+131.2	-	+131.2
Subtotal	-	+225.2	-	+225.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+425.5	-	+425.5
Other	-	-	-	-
Support	-	-131.2	-	-131.2
Subtotal	-	+294.3	-	+294.3
Total Changes	-	+519.5	-	+519.5
Current Estimate	-	6430.5	-	6430.5

b. (U) Previous Change Explanations --

Procurement

Economic: Revised economic rates.

Schedule: Funding of two ship in FY 1988 vice one in FY 1990 and one in FY 1993.

Estimating: Congressional and Gramm-Rudman reductions. Increase for change orders to update the product baseline of CVN 74/75. Current & prior escalation offset.

Support: Revised estimates for Post Delivery and Outfitting.

13c. (U) Cost Variance Analysis (Cont'd):
CVN-74/75

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised economic escalation indices. (Economic)	N/A	-67.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+15.4
Adjustment for Current & Prior Inflation. (Estimating)	+51.4	+54.9
Revised shipbuilding contract costs. (Estimating)	+239.5	+256.4
Increase for change orders (Estimating)	+4.9	+5.2
Reclassification of outfitting and post delivery to Sailawy costs. (Estimating)	+131.2	+169.6
Offset for reclassification of outfitting and post delivery. (Estimating)	-1.5	-16.3
Reclassify outfitting and post delivery from Support to Sailaway. (Support)	-131.2	-169.6
Procurement Subtotal	+294.3	+248.1

13a. (U) Cost Variance Analysis (Cont'd):
CVN-76

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	47.0	4250.2	0.0	4297.2
Previous Changes:				
Economic	+0.2	-21.2	-	-21.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-12.9	-62.9	-	-75.8
Other	-	-	-	-
Support	-	-1.2	-	-1.2
Subtotal	-12.7	-85.3	-	-98.0
Current Changes:				
Economic	+0.3	-102.3	-	-102.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+4.0	+466.6	-	+470.6
Other	-	-	-	-
Support	-	+1.2	-	+1.2
Subtotal	+4.3	+365.5	-	+369.8
Total Changes	-8.4	+280.2	-	+271.8
Current Estimate	38.6	4530.4	-	4569.0

13a. (U) Cost Variance Analysis (Cont'd):
CVN-76

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	48.1	3862.7	0.0	3910.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-12.5	-57.6	-	-70.1
Other	-	-	-	-
Support	-	-0.5	-	-0.5
Subtotal	-12.5	-58.1	-	-70.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+4.1	+440.9	-	+445.0
Other	-	-	-	-
Support	-	+0.5	-	+0.5
Subtotal	+4.1	+441.4	-	+445.5
Total Changes	-8.4	+383.3	-	+374.9
Current Estimate	39.7	4246.0	-	4285.7

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised economic indices. Economic adjustment for Negative Program Change.
Estimating: Revised program estimate. Current prior inflation offset. Refinement of program estimates.

Procurement
Economic: Revised economic indices. Economic adjustment for Negative Program Change.
Estimating: Program reduced based on latest inflation indices. Refinement of program estimates.
Support: Revised estimates for outfitting and post delivery.

13c. (U) Cost Variance Analysis (Cont'd):
CVN-76

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	+0.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.2
Revised estimate (Estimating)	+4.3	+4.2
RDT&E Subtotal	+4.1	+4.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-110.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+8.5
Adjustment for Current & Prior Inflation. (Estimating)	+8.5	+8.7
Increase cost for ship construction due to single ship buy, decling vendoe base, and increase engineering effort. (Estimating)	+347.1	+372.3
Congressional Reduction for Inflation assumptions and consultant services. (Estimating)	-9.0	-9.6
Reclassification of outfitting and post delivery to Sailaway costs. (Estimating)	-0.5	-1.2
Offset for reclassification of outfitting and post delivery. (Estimating)	+4.8	-0.4
Offset for revised inflation indices. (Estimating)	+90.0	+96.8
Reclassify outfitting and post delivery from Support TO Sailaway. (Support)	+0.5	+1.2
Procurement Subtotal	+441.4	+365.5

13a. (U) Cost Variance Analysis (Cont'd):
CVN-77

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	5540.8	0.0	5540.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	-	5540.8	-	5540.8

13a. (U) Cost Variance Analysis (Cont'd):
CVN-77

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	4557.1	0.0	4557.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	-	4557.1	-	4557.1

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations -- None.

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

CVN-74/75

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3483.0	-93.2	--	-322.2	--	357.4	--	--	-58.0	3425.1

CVN-76

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4297.2	-123.0	--	--	--	394.8	--	--	271.8	4569.0

CVN-77

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5540.800	--	--	--	--	--	--	--	--	5540.800

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) Nuclear Components:

DEPARTMENT OF ENERGY, WASHINGTON, DC
N00024-67-F-5110, EAO
Award: February 1, 1988
Definitized: February 1, 1988

Initial Contract Price		
Target	Ceiling	Qty
$914.4	$0.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$786.2	$0.0	0	$786.2	$786.2

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Cost and schedule reporting is not required on this contract.

(U) CVN-74/75 Construction:	Initial Contract Price Target	Ceiling	Qty
Tenneco, Newport News, VA N00024-88-C-2055, FPIF Award: N/A Definitized: June 30, 1988	$3674.0	$4318.6	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$3723.9	$4375.7	2	$3957.3	$3972.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-46.7	$-39.1
Cumulative Variances To Date (12/31/92)	$-140.2	$-157.4
Net Change	$-93.5	$-118.3

Explanation of Change:

The change in the schedule variance is due to the late delivery of large order procurements, pumps and valves. The main large order procurement is the turbine generator sets. Also, the shipbuilder's schedule provides for earlier placement of on-board-repair-parts(OBRP's) than will actually occur. The OBRP orders are placed so that the material is received close to ship delivery. The change in the cost variance is partly due to higher than budgeted cost for the material procurements. Increased manhours have been required to perform work-arounds for late material deliveries and have contributed to the cost variance. However the amount of manhours required to do this has improved recently. The shipbuilder has also revised his estimated manhours at completion for CVN 74/75. Based on higher CFE costs, a slight increase in manhours, and an increase in overhead allocation due to a decrease in shipyard workload, an overtarget amount of $283.0M is projected. My estimate of the probable overtarget assumes improved performance on CVN 75 as compared to CVN 74. This is due primarily to having the requisite CFE on hand at the proper time for the most efficient and effective integration.

15. (U) Contract Information (Cont'd):

(U) Nuclear Components:	Initial Contract Price Target	Ceiling	Qty
Westinghouse Electric Co., Monroeville, Pa N00024-88-C-4007, CPFF Award: February 1, 1988 Definitized: February 1, 1988	$540.1	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$842.9	N/A	0	$842.9	$842.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Funding for CVN 76 components has been added to this contract. Cost and schedule reporting is not required on this contract.

(U) Nuclear Components:	Initial Contract Price Target	Ceiling	Qty
General Electric Co., Schenectady, NY N00024-88-C-4008, CPFF Award: February 28, 1988 Definitized: February 28, 1988	$354.6	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$354.6	N/A	0	$354.6	$354.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Cost and schedule reporting is not required on this contract.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 27.3% (6 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 44.6% ($7560.5 / $16959.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

CVN-74/75

Appropriation	Prior Years (FY88-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	-	-	-	-	-
Procurement	6709.0	11.1	27.2	102.8	6850.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6709.0	11.1	27.2	102.8	6850.1

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

CVN-76

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2003)	Total
RDT&E	22.1	11.5	5.0	-	38.6
Procurement	829.4	-	3603.6	97.4	4530.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	851.5	11.5	3608.6	97.4	4569.0

16b. (U) Program Funding Summary (Cont'd):
CVN-77

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

CVN-77

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2009)	Total
RDT&E	-	-	-	-	-
Procurement	-	-	-	5540.8	5540.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	-	-	5540.8	5540.8

c. (U) Annual Summary -- CVN-74/75

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1988	2		6430.5	6174.0	6540.7	6123.5	3217.8	2.3
1992				140.3	162.0	162.0		1.7
1993				5.3	6.3	3.4	0.9	2.4
1994				9.2	11.1			2.4
1995				22.0	27.2			2.3
1996				36.5	46.1			2.3
1997				10.5	13.5			2.2
1998				27.4	36.1			2.2

16c. (U) Program Funding Summary (Cont'd):
CVN-74/75

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1999				5.3	7.1			2.2
Subtot	2		6430.5	6430.5	6850.1	6288.9	3218.7	
Grand Total	2		6430.5	6430.5	6850.1	6288.9	3218.7	

c. (U) Annual Summary -- CVN-76

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1991				2.0	1.8			4.3
1992				8.8	8.3			2.8
1993				12.4	12.0			2.4
1994				11.6	11.5			2.4
1995				4.9	5.0			2.3
Subtot				39.7	38.6			

16c. (U) Program Funding Summary (Cont'd):
CVN-76

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1993				808.2	829.4	829.4	4.5	2.4
1995	1		4246.0	3359.7	3603.6			2.3
1999				1.0	1.2			2.3
2000				18.5	22.1			2.2
2001				12.4	15.2			2.2
2002				7.0	8.8			2.2
2003				39.2	50.1			2.2
Subtot	1		4246.0	4246.0	4530.4	829.4	4.5	
Grand Total	1		4246.0	4285.7	4569.0	829.4	4.5	

c. (U) Annual Summary -- CVN-77

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1999				784.9	918.5			2.2
2001	1		4557.1	3685.9	4504.9			2.2

16c. (U) Program Funding Summary (Cont'd):
CVN-77

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
2005				6.5	8.7			2.2
2006				15.0	20.4			2.2
2007				11.7	16.0			2.2
2008				7.6	10.3			2.2
2009				45.5	62.0			2.2
Subtot	1		4557.1	4557.1	5540.8			
Grand Total	1		4557.1	4557.1	5540.8			

17. (U) Production Rate Data:

CVN-74/75

a. (U) Production Baseline Rate

Not required for programs that the production rate is less than six items per year.

17b. (U) Production Rate Data (Cont'd):
CVN-74/75

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	11.1	0.0	-11.1	-11.1
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	27.2	0.0	-27.2	-27.2
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	102.8	0.0	-102.8	-102.8

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	2/0

d. (U) Approved Design-to-Cost Objective -- N/A.

CVN-76

a. (U) Production Baseline Rate

Not required required for programs that the production rate is less than six items per year.

17b. (U) Production Rate Data (Cont'd):
CVN-76

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		3603.6		N/A	N/A
Procurement Qty		1		N/A	N/A
Proc. Unit Cost	N/A	3603.600	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		97.4		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	1/0

d. (U) Approved Design-to-Cost Objective -- N/A.

CVN-77

a. (U) Production Baseline Rate

Not required for programs that the production rate is less than six items per year.

17b. (U) Production Rate Data (Cont'd):
CVN-77

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		5540.8		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	1/0

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
CVN-74/75

a. (U) Assumptions and Ground Rules --

Thes costs are based on the operating costs for supplies, equipage, and pierside support when deployed.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CVN	N/A
Operating costs	11.4	N/A
Total	11.4	N/A

18c. (U) Operating and Support Costs (Cont'd):
CVN-74/75

c. (U) Contractor Support Costs -- None.

CVN-76

a. (U) Assumptions and Ground Rules --

Same as CVN 74/75 above.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

CVN-77

a. (U) Assumptions and Ground Rules --

Same as CVN 74/75 above.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

AF-25 NAVSTAR

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: NAVSTAR GPS

AS OF DATE: December 31, 1992

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MAY 1 1 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):**
NAVSTAR GPS/NAVSTAR Global Positioning System

2. (U) **DoD Component:** USAF

Joint Participants:
USA, USN, USMC

3. (U) **Responsible Office and Telephone Number:**
NAVSTAR GPS Joint Program Office
Space and Missile Systems Center
2435 Vela Way, Suite 1613
Los Angeles AFB, CA 90245-5500

COL LAWRENCE P GRAVISS
Assigned: September 27, 1991
AV 833-1526 COMM 0310) 363-1526

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 0305164A, 0305164F, 0305164M, 0305164N, 0305165F, 0603421F, 0604478F
PE 0604777N, 0604778A, 0604778F, 0206626M

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 1109 ICN N/A (Navy)
APPN 1506 ICN N/A (Navy)
APPN 1611 ICN N/A (Navy)
APPN 1810 ICN N/A (Navy)
APPN 2031 ICN N/A (Army)
APPN 2035 ICN N/A (Army)
APPN 3010 ICN MGPS003010 (Air Force)
APPN 3020 ICN MGPS003020 (Air Force)
APPN 3080 ICN MGPS003080 (Air Force)
MILCON:
PE 0305165F
O & M:
PE 0305164F, 0305164N

5. (U) Related Programs:
Nuclear Detonation (NUDET) Detection System (NDS); and Space Boosters Program (Delta II).

6. (U) Mission and Description:
The NAVSTAR Global Positioning System (GPS) is a space-based radio positioning, navigation and time distribution system. The GPS provides precise, continuous, all-weather, common grid worldwide positioning, navigation and time reference capability to a multiplicity of users. Mission areas supported include navigation and position fixing, air interdiction, close air support, special operations, strategic attack, counterair and aerospace defense, theater and tactical command, control communications and intelligence and ground and sea warfare. GPS carries a suite of NDS sensors as a secondary payload. They provide their users worldwide, near realtime, three dimensional location of nuclear detonations. While NAVSTAR GPS does not replace any USAF weapon system, it provides the capability to replace the following support systems: VHF Omnidirectional Range (VOR), Long Range Aid to Navigation (LORAN), OMEGA, Tactical Air Navigation (TACAN), and Distance Measurement Equipment (DME).

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
GPS was approved to enter Full Scale Development in Aug 79 and ten Block I development satellites were launched through Oct 85 to support system and User Equipment (UE) testing. The GPS ground control system was also developed during this phase. This system consists of three ground antenna systems, five monitor stations installed at various worldwide locations, and a master control station. Program Management Responsibility Transfer (PMRT) of the ground segment to Air Force Space Command (AFSPACECOM) was

7a. (U) Program Highlights (Cont'd):

accomplished in Apr 90.

In May 83, a firm fixed priced multiyear contract was awarded for 28 Block II GPS production satellites. Qualification testing was completed in May 86. However, due to the space shuttle accident, the production contract was restructured in FY88 to meet projected launch vehicle schedules. The first production satellite was launched in Feb 89. In FY88 twenty replenishment satellites (Block IIR) were added to the program. In FY91 the government exercised the GPS long lead item production option for the 20 Block IIR satellites with first delivery in FY96.

GPS UE development began in FY79. Testing was conducted on a variety of land, sea, and airborne test platforms. Operational Test (OT) results showed that the UE navigation performance met or exceeded operational requirements; however, demonstration of reliable performance identified problems.

Following a source selection Rockwell International/Collins Government Avionics Division (CGAD) was awarded the UE Research & Development (R&D) Contract, including production options, on 1 Apr 85.

The Joint Requirements Management Board (JRMB) approved Low Rate Initial Production (LRIP) for UE in Jun 86. The first production option of the Rockwell contract was exercised in Aug 86.

In Oct 87, the Naval Avionics Center (NAC) awarded two contracts, on behalf of the JPO, to potential second sources for the two- and five-channel airborne and shipboard receivers. The contracts were awarded to SCI Technology and Canadian-Marconi.

Approval to continue LRIP through FY91 was granted by an Acquisition Decision Memorandum (ADM) dated 20 Sep 90. As a result of the ADM decision, five UE production contracts were awarded in Sep 90. In addition, a contract for the Miniaturized Airborne GPS Receiver (MAGR) was awarded in Dec 90. Numerous orders were received and contracts were awarded for Small Lightweight GPS Receivers (SLGR) to support Operation Desert Storm.

In 1991 the requirement to procure Phase III one and two-channel UE was replaced by the Precise Lightweight GPS Receiver (PLGR) and the MAGR.

AF Cost Analysis Improvement Group Milestone III Decision Memorandum was in Nov 91.

7a. (U) Program Highlights (Cont'd):

The GPS Air Force Integrated Weapon Systems Management (IWSM) Concept of Operations (CONOPS) plan for the merger of the Air Force Systems Command and Air Force Logistics Command was signed by the Air Force Acquisition Executive (AFAE) on 12 Dec 91. NAVSTAR GPS Joint Program Office (JPO) was the first Space Program selected to operate under IWSM.

b. (U) Significant Developments Since Last Report --
GPS User Equipment (UE) successfully completed DAB Milestone IIIB in Jan 92. The Acquisition Decision Memorandum (ADM), dated 30 Jan 92, approved full rate production for the Phase III five-channel GPS UE. Additionally, the Air Force (AF) was directed to provide acquisition strategy for the Precise Lightweight GPS Receiver (PLGR) and plans for acquisition of other future DoD GPS equipment to determine the appropriate level (Defense Acquisition Executive or Component Acquisition Executive) for subsequent production decisions.

The Integrated Weapon Systems Management (IWSM) implementation plan was signed by the Secretary of the Air Force/Acquisition in Mar 92.

The first full rate production options on all five UE contracts were exercised. The first Miniaturized Airborne GPS Receiver (MAGR) test units were received and Operational Test and Evaluation (OT&E) on the AV-8B was completed in Oct 92.

On 1 Oct 92, the NAVSTAR GPS program transferred from the Program Executive Officer for Space portfolio to that of a Designated Acquisition Commander Program. A Weapon System Program Assessment Review (for sustainability activities) was given to the AF Council on 22 Oct 92.

In Oct 92, an ADM was issued redesignating GPS UE from an Acquisition Category 1D to an Acquisition Category 1C program delegating production decision authority to SAF/AQ.

In the operational control segment, Operational Release (OR) 5.30A (Host Software) was delivered to AFSPACECOM on 12 Dec 92.

On 16 Dec 92, SAF/AQ delegated production decision authority for GPS UE to the Commander, Space and Missile Systems Center. The Timing GPS Receiver (TGR) contract was awarded 7 Dec 92. The Block IIR delta Critical Design Review was held in Dec 92. NAVSTAR satellites II-12 through II-17 were launched.

The NAVSTAR GPS system is expected to satisfy the mission requirements.

7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --
Missions II-18 and II-19 were launched Feb 93 and March 93 respectively. For operational control segment, transportable ground antenna acceptance testing was completed in Feb 93. Award of the PLGR production contract was made on 5 March 1993. The GPS office responded to Air Mobility Command's request for emergency procurement of GPS Standard Positioning Service receivers for immediate installation on C-130 aircraft earmarked for Operation Restore Hope. The GPS program was named the winner of the Robert J. Collier Trophy on 10 Feb 93, the first Air Force space program to ever win the award. Depot Initial Operation Capability (IOC) for GPS UE was achieved on 25 Mar 93.

8. (U) Threshold Breaches:
There is an Acquisition Program Baseline (APB) cost breach to the Development Cost for User Equipment to the 13 May 93 APB. A Program Deviation Report (PDRs) will be submitted to Air Staff. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:
NAVSTAR GPS Satellite

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	DEC 73	DEC 73	DEC 73
Milestone II (DSARC)	JUN 79	JUN 79	JUN 79
First Production Satellite Launch	JAN 87	FEB 89	FEB 89
Block IIR Contract Award	N/A	JUN 89	JUN 89
Control Segment Turnover to AFSPACECOM	N/A	APR 90	APR 90
21 Satellites on-orbit	N/A	MAR 93	JUN 93(Ch-1)
Availability of First Block IIR Satellite for Launch	N/A	MAR 96	MAR 96
Last Block IIA Satellite Delivery	N/A	NOV 92	NOV 92
First Block IIR Contract Delivery	N/A	NOV 95	NOV 95
Second Block IIR Contract Delivery	N/A	FEB 96	FEB 96

b. (U) Previous Change Explanations --

Launch of the first Block II satellite slipped from Jan 87 to Jan 89 due to the Shuttle standown. Subsequently, the Program Management Directive (PMD) was revised to incorporate the Space Transportation System (STS) standown. Delay in the Delta II initial launch capability resulted in first production satellite launch date being slipped to Feb 89. The control segment turnover to AFSPACECOM was accomplished in April 90.

9c. (U) Schedule (Cont'd):
NAVSTAR GPS Satellite

c. (U) Current Change Explanations --

(Ch-1) Current estimate for 21 Satellites on-orbit moved from Mar 93 to Jun 93 to reflect our current launch manifest.

d. (U) References --

(U) Development Estimate:
Decision Coordinating Paper (DCP) #133, Revision B, 1 Feb 80.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

NAVSTAR GPS User Equip

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	DEC 73	N/A	DEC 73
Milestone II (DSARC)	JUN 79	N/A	JUN 79
Milestone III (DSARC)	SEP 83	N/A	SEP 83
Milestone IIIA (JRMB) Award	N/A	JUN 86	JUN 86
AF DT User Equipment (UE)			
Begin	N/A	JUL 88	JUL 88
Complete	N/A	MAY 89	AUG 89
User Equipment OT&E			
Begin	N/A	JUN 89	JUN 89
Complete	N/A	JUL 91	JUL 91
Milestone IIIB (DAB) UE	MAR 89	SEP 91	JAN 92
Initial Depot Capability	N/A	SEP 92	MAR 93(Ch-1)
First Full-Rate UE Production Delivery	N/A	NOV 93	NOV 93
Full Depot Capability		JUN 97	JUN 97(Ch-2)

* Denotes non-APB data elements.

b. (U) Previous Change Explanations --

Reliability and maintainability problems identified during Phase II dictated additional testing which caused the delayed completion of user equipment Development Testing (DT). Milestone IIIB, user equipment full rate production, is required to comply with Public Law 9894. Milestone IIIB decision delays, from Mar 89 to Sep 90, were attributed to schedule changes for the first Block II satellite launch, late User Equipment deliveries, and increased coordination at the conclusion of testing. In Sep 90, the Milestone IIIB decision was again delayed requiring additional operational testing to verify

9b. (U) Schedule (Cont'd):
NAVSTAR GPS User Equip
(without qualifications) that all exit criteria were met. The first full-rate UE production delivery date slipped as a result of the Milestone III delay. Milestone IIIB was again delayed, this time from Sep 91 to Jan 92. As a result of the Milestone IIIB delay, the first full rate UE production delivery was also delayed from Apr 93 to Nov 93.

c. (U) Current Change Explanations --

(Ch-1) Depot Capability slipped from Sep 92 to Mar 93 as a result of the late delivery of an ECP for the depot automatic test equipment.

(Ch-2) Full Depot Capability is a new milestone added since Dec 91 SAR.

d. (U) References --

(U) Development Estimate:
Decision Coordinating Paper (DCP) #133 Revision B, 1 Feb 1980; DCP on User Equipment, Jun 86.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

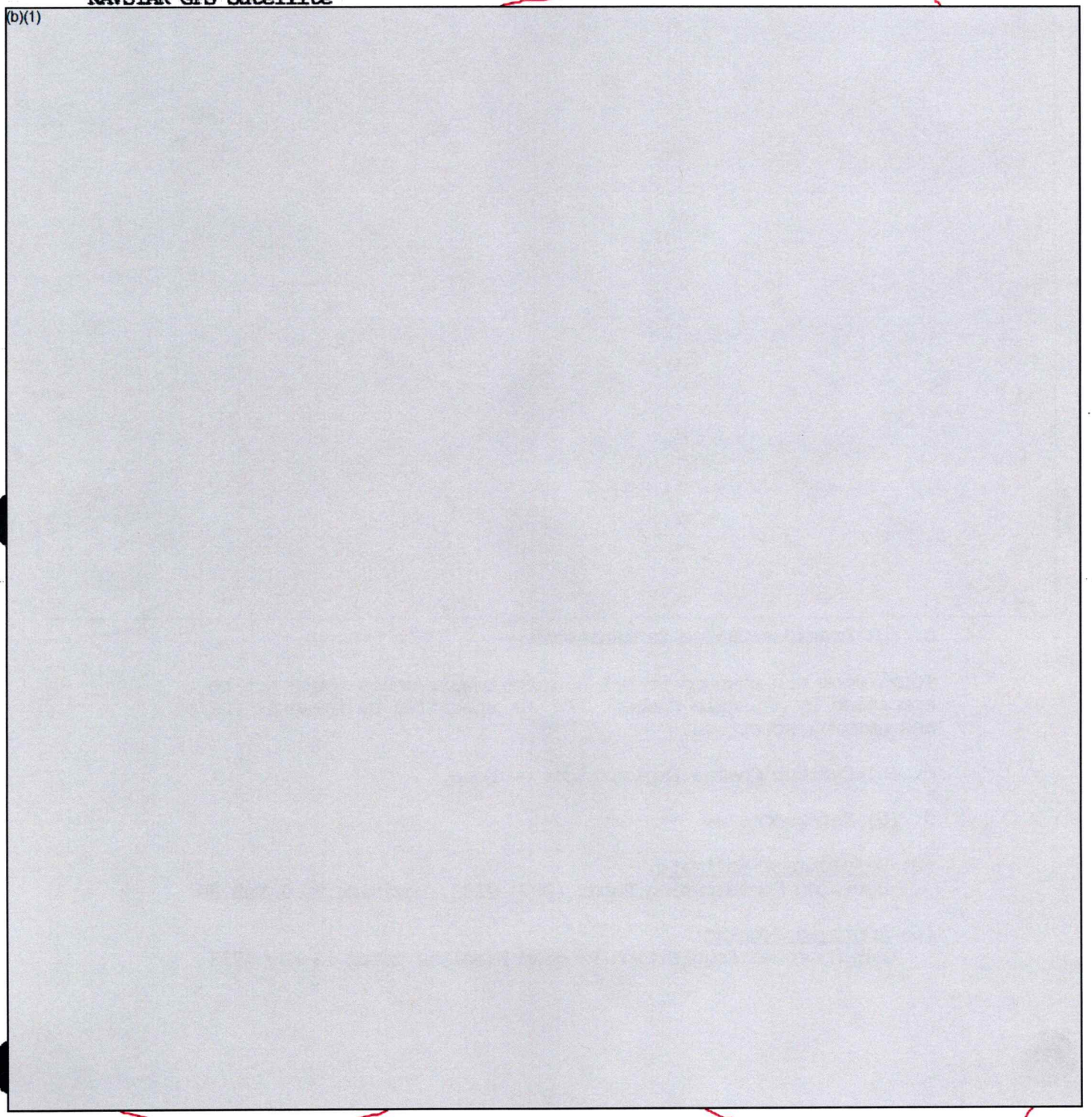
10. (U) Performance Characteristics:
NAVSTAR GPS Satellite

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
3-D System Positioning Accuracy (meters) (Spherical Error Probable (SEP))	16	16 / 16	10	16
3-D System Positioning Accuracy for 180 days after last Nav Update				
Block II SEP (km)	N/A	10 / 10	TBD	10
Block IIR SEP (m)	N/A	16 / 16	TBD	16
Block II Satellite Mean Mission Duration (MMD)(yrs)	6	6 / 6	2.05 A/	6

10a. (U) Performance Characteristics (Cont'd):

NAVSTAR GPS Satellite

(b)(1)



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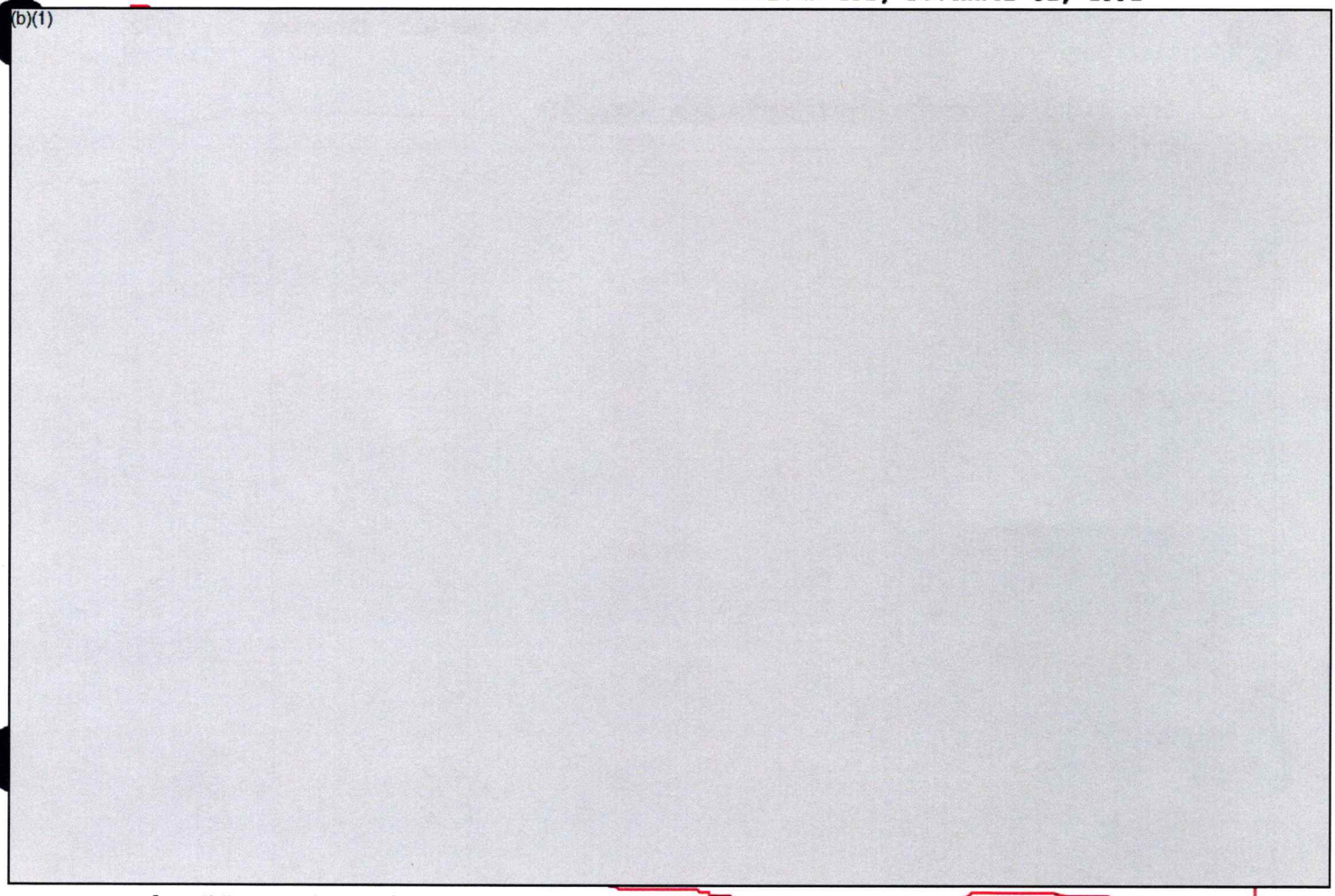

b. (U) Previous Change Explanations --

Total dose was changed to N/A because requirements could not be specified by a single number. It was specified by integral fusion and natural spectrums.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
Decision Coordinating Paper (DCP) #133, Revision B, 1 Feb 80.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

10d. (U) Performance Characteristics (Cont'd):

NAVSTAR GPS User Equip

a. (U) Performance —	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Reliability Mean Time Between Operational Mission Failures (hours)					
Airborne					
5-Channel	550	590	/ 500	2130.2	500
2-Channel	550	929	/ 500	722.8	500
Ground (hrs)	850	2000	/ 500	1653.2	500
Sea (hrs)	900	680	/ 680	2880.8	680
Maintainability Mean Time to Repair (hours)					
Airborne					
5-Channel	1.3	1	/ 1	.75	1.0
2-Channel	1.3	.75	/ .75	.27	.75
Ground (hrs)	1.2	.75	/ .75	.18	.75
Sea (hrs)	1.3	1.5	/ 1.5	.77	1.5

b. (U) Previous Change Explanations —

The mean time between maintenance was decreased for the airborne, ground and sea user equipment sets at Milestone IIIB. In addition, airborne user equipment 2 and 5 channel sets were separated for mean time between maintenance and maintainability manhours to repair.

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:
Decision Coordinating Paper (DCP) #133 Revision B, 1 Feb 1980; DCP on User Equipment, Jun 86.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
NAVSTAR GPS Satellite

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	967.6	919.3	994.8
Procurement	623.4	1435.3	1347.4
Flyaway	(583.6)		(1079.0)
Other Weapon Systems	(39.8)		(267.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.6)
Construction (MILCON)	8.4	4.7	4.7
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 79 Base-Year $	1599.4	2359.3	2346.9
Escalation	707.3	1681.1	1783.9
Development (RDT&E)	(204.9)	(273.4)	(360.2)
Procurement	(496.1)	(1405.1)	(1421.1)
Construction (MILCON)	(6.3)	(2.6)	(2.6)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2306.7	4040.4	4130.8
b. (U) Quantity --			
Development (RDT&E)	12	12	12
Procurement	28	51	49
Total	40	63	61

Note: All R & D prototypes were considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Decision Coordinating Paper (DCP) #133, Revision B, 1 Feb 80.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11a. (U) Total Program Cost and Quantity (Cont'd):

NAVSTAR GPS User Equip

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	941.8	1005.3	1041.6
Procurement	1613.1	1919.2	2143.3
Flyaway	(1115.9)		(1082.0)
Other Weapon Systems	(497.2)		(1061.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	37.8
Total FY 79 Base-Year $	2554.9	2924.5	3222.7
Escalation	2320.9	3479.9	3560.5
Development (RDT&E)	(441.9)	(593.7)	(621.5)
Procurement	(1879.0)	(2886.2)	(2899.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(39.8)
Total Then-Year $	4875.8	6404.4	6783.2
b. (U) Quantity --			
Development (RDT&E)	129	129	248
Procurement	27210	77665	119695
Total	27339	77794	119943

All units are considered fully configured end items.

c. (U) Foreign Military Sales/International Cooperative Programs --

	Dollars	Quantity Receivers/AOCs
Australia	$ .6M	38/316
Germany	$ 10.3M	59/295
Canada	$ .6M	6/75
Denmark	$ .0M	0/24
France	$ .1M	0/423
Italy	$ .0M	0/20
Japan	$ 10.8M	72/330
Netherlands	$ .8M	0/343
Norway	$ .0M	0/128
United Kingdom	$ .5M	0/1706
Spain	$ .5M	3/15
Belgium	$ .0M	0/100
Turkey	$ .4M	0/25
NATO	$ 1.0M	0/0

Notes: AOC - Auxiliary Output Chip. Currently the program has $1.0M

11c. (U) Total Program Cost and Quantity (Cont'd):

NAVSTAR GPS User Equip

for NATO under a service contract. Denmark, Italy, Belgium and Norway have dollar values which round to less than $ .1M.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Decision Coordinating Paper (DCP) #133 Revision B, 1 Feb 1980; DCP on User Equipment, Jun 86.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

NAVSTAR GPS Satellite

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	4130.8	4340.5	4130.8
(2) Quantity	61	65	61
(3) Unit Cost	67.718	66.777	67.718
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	181.4	189.5	176.5
Less CY Adv Proc	64.2	59.2	55.9
Plus PY Adv Proc	68.4	62.3	64.7
Net Total	185.6	192.6	185.3
(2) Quantity	4	4	4
(3) Unit Cost	46.400	48.150	46.325

NAVSTAR GPS User Equip

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6783.2	6520.2	6783.2
(2) Quantity	119943	77913	119943
(3) Unit Cost	0.057	0.084	0.057

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

NAVSTAR GPS User Equip

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	192.2	192.2	346.2
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	192.2	192.2	346.2
(2) Quantity	16099	16099	17277
(3) Unit Cost	0.012	0.012	0.020

13. (U) Cost Variance Analysis:
NAVSTAR GPS Satellite

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1172.5	1119.5	14.7	2306.7
Previous Changes:				
Economic	-34.8	+38.4	-1.4	+2.2
Quantity	-	+927.3	-	+927.3
Schedule	+6.8	+623.9	-	+630.7
Engineering	+291.6	+344.0	-	+635.6
Estimating	-126.8	-605.7	+0.5	-732.0
Other	-	-	-	-
Support	+58.8	+517.7	-6.5	+570.0
Subtotal	+195.6	+1845.6	-7.4	+2033.8
Current Changes:				
Economic	-7.5	-102.8	-	-110.3
Quantity	-	-116.7	-	-116.7
Schedule	-	-7.7	-	-7.7
Engineering	-	-	-	-
Estimating	-5.6	-15.4	-	-21.0
Other	-	-	-	-
Support	-	+46.0	-	+46.0
Subtotal	-13.1	-196.6	-	-209.7
Total Changes	+182.5	+1649.0	-7.4	+1824.1
Current Estimate	1355.0	2768.5	7.3	4130.8

13a. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS Satellite

a. (U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	967.6	623.4	8.4	1599.4
Previous Changes:				
Quantity	-	+410.5	-	+410.5
Schedule	+4.5	+2.5	-	+7.0
Engineering	+160.6	+239.0	-	+399.6
Estimating	-167.8	-74.8	+0.4	-242.2
Other	-	-	-	-
Support	+33.1	+193.6	-4.1	+222.6
Subtotal	+30.4	+770.8	-3.7	+797.5
Current Changes:				
Quantity	-	-52.3	-	-52.3
Schedule	-	-3.4	-	-3.4
Engineering	-	-	-	-
Estimating	-3.2	-26.1	-	-29.3
Other	-	-	-	-
Support	-	+35.0	-	+35.0
Subtotal	-3.2	-46.8	-	-50.0
Total Changes	+27.2	+724.0	-3.7	+747.5
Current Estimate	994.8	1347.4	4.7	2346.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Schedule: One-year acceleration in design/development of flexible modular interface for tailoring user equipment to host vehicles.

Engineering: Funds added to develop and integrate product improvement on the Block II space vehicle. Funding increased due to redefinition of GPS Survivability Program. Funds added for increased development and testing associated with adding replenishment satellites (Block IIR) to the program. Funds added for clarification of Block IIR engineering design

13b. (U) Cost Variance Analysis (Cont'd):

NAVSTAR GPS Satellite

requirements.

Estimating: Adjustment made for current and prior year escalation changes. Funding for additional year in support of Control and User Segments. Funds added (FY86-88) for necessary control segment modifications for interface with Block II satellites. Funds added for GE Block IIR development contract and required Block IIR contract support (FY01-06). AF funds reduced by Congress for future ECO estimates and FFRDC funding.

Support: Funds withdrawn due to delay in Beneficial Occupancy Date for Master Control Station move into Consolidated Space Operations Center. Funds added to continue control segment support until turnover to Air Force Space Command. Additional support added due to space shuttle launch delays. Funds added for support costs associated with the Block IIR development and test effort.

Procurement

Economic: Revised economic escalation indices.

Quantity: Twenty Block IIR satellites procured on an annual basis (FY91-1, FY92-3, FY93-3, FY94-4, FY95-3, FY96-4, FY97-2) added and six Block IIR satellites procured on annual options added to the program. One optional Block IIR satellite deleted from the program (FY92).

Schedule: Funds reduced for one-year delay in satellite production start. Funds added due to delay of STS launch capability. Reduced funding due to savings from changing Block IIR procurement to four per year. Change in optional Block IIR satellite funding profile; one satellite slipped from FY94 to FY95.

Engineering: Funds reduced due to deletion of crosslink ranging, increased hardening and autonomous housekeeping requirements. Funds added for engineering changes associated with Block IIR procurement.

Estimating: Adjustments made for prior and current year escalation changes. Funds reduced due to change in satellite procurement approach from an annual to a Multiyear Procurement (MYP) for Block II; savings partially offset by need to fully fund satellites by Congressional direction. Funds added for Orbital Insertion Motor and Data Transfer System for GPS satellites. Funds added associated with

13b. (U) Cost Variance Analysis (Cont'd):

NAVSTAR GPS Satellite

the addition of Block IIR. Funds reduced due to change in satellite procurement approach from an annual to a MYP for Block IIR. Funds added for Block IIR outyears (FY01-06). Funds reduced due to congressional withdrawal of FY92 cancellation ceiling for Block IIR MYP. Funds reduced due to congressional withdrawal of funds for Block IIR Engr dsgn rqmts clarification. Funds reduced as a result of congressional reduction of AF Engr. chg. orders. Funds reduced for realignment of support and flyaway for Block IIR reductions. Funds reduced for AF reprogramming of excess prior year funds. Funds added for storage, launch and on-orbit support on Block IIR outyears (FY98-FY06).

Support: Funds added for flight operations due to one-year extension in the satellite program. Funds added for Shuttle Recovery Program. Funds added for support costs associated with Block IIR procurement. Funds added (FY89) for Block IIR outyears (FY01-06). Funds realigned for support and flyaway for Block IIR. Funds reduced for AF FFRDC and contract support. Funds reduced for AF reprogramming of excess prior year funds. Funds added for FY93-FY99 tech support.

MILCON

Economic: Revised economic escalation indices.

Estimating: Adjustment for difference between President's Budget and required funding.

Support: Deletion of Consolidated Space Operation Center (CSOC) contingency funding.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-7.5
Adjustment for current and prior year escalation (Estimating)	-0.3	-0.3
Funding added to program to reimburse Desert Storm (Estimating)	+0.1	+0.1

13c. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS Satellite

	(Dollars in Millions) Base-Year	Then-Year
Reduction of future engineering change order estimates and Federally Funded Research and Development Center funding as a result of AF reductions directed by Congress (Estimating)	-3.0	-5.4
RDT&E Subtotal	-3.2	-13.1
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-102.8
Procurement of two Block IIR optional satellites cancelled by Congress (FY93) (Quantity)	-26.4	-58.3
Procurement of two Block IIR optional satellites cancelled by OSD (FY94) (Quantity)	-25.9	-58.4
Change in optional Block IIR satellite funding profile, one satellite moved from FY95 to FY94 (Schedule)	-3.4	-7.7
Adjustment for current and prior year escalation (Estimating)	+6.2	+13.4
AF reprogramming of excess prior and current year funds (Estimating)	-17.4	-35.5
Increased funding in FY97-99 for control system mods (Estimating)	+4.9	+11.3
Increased funding in FY94-99 for initial spares associated with control system mods. (Support)	+0.6	+1.4
Increased funding for control system mods added to program as a new requirement. (Estimating)	+5.3	+11.1
Termination price of cancelled Block IIR optional satellites (Estimating)	-1.4	-2.2
Decreased advance procurement for cancelled Block IIR (Estimating)	-10.0	--
Realignment Flyaway and Support from previous SAR (Estimating)	-5.9	-12.1
Decrease in Engr. Chg. orders as a result of Congressionally directed AF reductions (Estimating)	-1.2	-3.1
AF realigning of funding for higher priorities (Estimating)	-6.6	-15.0

13c. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS Satellite

	(Dollars in Millions) Base-Year	Then-Year
Offset to overstated inflation reduction in AF database (Estimating)	—	+16.7
Additional Support requirements identified for Block IIR (Support)	+30.5	+36.7
Reduction of contract support as a result of Congressionally directed AF reductions (Support)	-2.0	-4.2
Realignment of Flyaway and Support from previous SAR (Support)	+5.9	+12.1
Procurement Subtotal	-46.8	-196.6

13a. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Development Estimate	1383.7	3492.1	0.0	4875.8
Previous Changes:				
Economic	-8.7	+20.4	-4.3	+7.4
Quantity	-	-239.0	-20.0	-259.0
Schedule	-	+506.0	-	+506.0
Engineering	-	-46.8	-	-46.8
Estimating	+241.8	+400.5	+140.1	+782.4
Other	-	-	-	-
Support	-17.8	+672.2	-	+654.4
Subtotal	+215.3	+1313.3	+115.8	+1644.4
Current Changes:				
Economic	-23.9	-274.6	-4.3	-302.8
Quantity	-	+156.8	-	+156.8
Schedule	+20.7	-39.4	-	-18.7
Engineering	-	-	-	-
Estimating	+67.3	-439.7	-33.9	-406.3
Other	-	-	-	-
Support	-	+834.0	-	+834.0
Subtotal	+64.1	+237.1	-38.2	+263.0
Total Changes	+279.4	+1550.4	+77.6	+1907.4
Current Estimate	1663.1	5042.5	77.6	6783.2

13a. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

a. (U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Development Estimate	941.8	1613.1	0.0	2554.9
Previous Changes:				
Quantity	-	-174.5	-10.0	-184.5
Schedule	-	+82.3	-	+82.3
Engineering	-	-21.3	-	-21.3
Estimating	+68.6	+236.5	+63.2	+368.3
Other	-	-	-	-
Support	-5.1	+183.1	-	+178.0
Subtotal	+63.5	+306.1	+53.2	+422.8
Current Changes:				
Quantity	-	+66.0	-	+66.0
Schedule	+10.6	-7.3	-	+3.3
Engineering	-	-	-	-
Estimating	+25.7	-215.6	-15.4	-205.3
Other	-	-	-	-
Support	-	+381.0	-	+381.0
Subtotal	+36.3	+224.1	-15.4	+245.0
Total Changes	+99.8	+530.2	+37.8	+667.8
Current Estimate	1041.6	2143.3	37.8	3222.7

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised economic escalation indices.
Estimating: Decreased aircraft modification efforts and prior year escalation. Revised platform integration estimates from aircraft manufacturers. Adjustment for current and prior year escalation change. Increased cost for Navy and AF group "B" (User Equipment) and Navy "A" kits (integration hardware). Air Force revised Host Vehicle (HV) integration. Army revised platform integration and test estimates. Navy and Marine Corps revised HV integration estimates. Increased estimate for AF

13b. (U) Cost Variance Analysis (Cont'd):

NAVSTAR GPS User Equip

for 1999 and beyond. Funds added due to Naval revision of host vehicle and engineering estimates. Increased Group B development estimate.

Support: AF increased Mission Support and Contractor Support estimate.

Procurement

Economic: Revised economic escalation indices.

Quantity: Negative cost variance is due to the transition from MIL-SPEC User Equipment to Non-Developmental Items (NDI) procurement of MAGRs, SLGRs and PLGRs. The actual procurement of end items increased. However, the dollars decreased due to lower costs of the NDI equipment. Funds reduced due to AF quantity decrease. Funds increased due to Army quantity increase for transition from MIL-SPEC to NDI. Funds reduced due to Navy decrease in aircraft/ship user equipment sets and increase of PLGRs.

Schedule: Procurement schedule restructured and extended due to revised force structure requirements. Funds added due to AF host vehicle schedules slipping. Funds added due to Army delay in aircraft platform installs while accelerating ground users.

Engineering: Incorporation of Value Engineering Change Proposal for User Equipment Receiver.

Estimating: Increase is due to changes in methodology including: Engineering Change Proposals (ECPs), type of equipment, installation labor, Engineering, A-Kits, documentation, aircraft integration & installation, update of learning curves to reflect new contract price, revised program support costs, correction of previous SARs and adjustment for current and prior year escalation. Funds added for new estimate for Navy non-GPS group B-kits.

Support: Variance is due to increases/decreases of initial spares and support equipment associated with changes in User Equipment procurement, schedule delays and program stretch out. Funds added for AF new estimate for Depot Support, UE test, and JPO tech support/program support. Funds added for adjustment of support costs to accomodate increased Army quantity. Funds added for revised contractor support estimates associated with new NDI equipment requirements for the Navy.

13b. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

O & M
Economic: Revised economic escalation indices.
Quantity: Navy and Marine Corps reduced labor estimates due to reduced quantity.
Estimating: Installation funding for Air Force user equipment modifications which will be performed at Air Force Logistics centers. Addition of Marine and Navy requirements. Navy and Army added new estimates for installation labor. Funds reduced for training of maintenance and operations personnel. Funds reduced for revised Interim Contract Support (ICS) estimate.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-23.9
Adjustment for current & prior year escalation - AF (Estimating)	+0.4	+0.7
Adjustment for current & prior year escalation - Navy (Estimating)	+0.6	+0.9
Integration engineering cost estimates increased to support accelerated platform integrations - AF (Schedule)	+10.6	+20.7
Extended estimate by two years to accomodate next generation GPS - AF (Estimating)	+14.8	+40.3
Revised estimates for P31 and GPS Next Generation Receiver (GNGR) - AF (Estimating)	+33.5	+88.9
Tech support for Miniaturized Airborne GPS Receiver non-developmental items (NDI) transferred to procurement in accordance with (IAW) Milestone Approval - AF (Estimating)	-34.4	-89.0
Increased Engr Spt required for spt of next generation GPS & other developmental GPS enhancements - Navy (Estimating)	+10.8	+25.5
RDT&E Subtotal	+36.3	+64.1

13c. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-274.6
Precise Lightweight GPS Receiver (PLGR) and next generation requirements increase of 10211 units - AF (Quantity)	+26.2	+56.6
Force structure reduction of aircraft requirements for 1177 units - AF (Quantity)	-29.2	-75.4
UE requirements increase for 687 units - Navy (Quantity)	+16.8	+43.7
UE requirements increase for 32309 units - Army (Quantity)	+52.2	+131.9
Revised procurement schedules - AF (Schedule)	+10.7	+15.1
Revised procurement schedules - Navy (Schedule)	+5.6	+12.3
Revised schedules to buy out requirements earlier - Army (Schedule)	-23.6	-66.8
PLGR contract costs significantly lower than previously used estimate - AF (Estimating)	-1.2	-6.2
PLGR contract costs significantly lower than previously used estimate - Navy (Estimating)	-6.4	-15.6
PLGR contract costs significantly lower than previously used estimate - Army (Estimating)	-68.1	-190.4
Adjustment for current and prior year escalation - AF (Estimating)	-2.8	-6.6
Adjustment for current and prior year escalation - Navy (Estimating)	-1.1	-2.6
Adjustment for current & prior year escalation - Army (Estimating)	-0.5	-0.8
Revised aircraft modifications - Navy (Estimating)	+9.0	+44.7
Revised aircraft modification - AF (Estimating)	-144.5	-262.2
Revised support estimates - Navy (Support)	+84.6	+170.3

13c. (U) Cost Variance Analysis (Cont'd):

NAVSTAR GPS User Equip

	(Dollars in Millions) Base-Year	Then-Year
Tech support for miniaturized airborne GPS receiver non-developmental items transferred to procurement IAW milestone approval (Support)	+34.4	+89.0
Revised PLGR spares & installation kit requirements - Army (Support)	-6.8	-26.0
Revised estimate of support costs due to revised A/C System Program Director requirements, next generation PLGR and other next generation user equipment. (Support)	+268.8	+600.7
Procurement Subtotal	+224.1	+237.1
MILCON Subtotal	--	--
(4) O & M		
Revised economic escalation indices (Economic)	N/A	-4.3
Extended years of estimate to match procurement phase-in - AF (Estimating)	+5.5	+13.9
Decreased estimate for aircraft support - AF (Estimating)	-0.5	-1.1
Adjustment for current & prior year escalation - Navy (Estimating)	+0.1	+0.1
Deleted years of estimate to match procurement phase-in - Navy (Estimating)	-11.7	-30.5
Decreased estimate for PLGR support (Estimating)	-8.8	-16.3
O & M Subtotal	-15.4	-38.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

NAVSTAR GPS Satellite
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
57.67	-1.77	-6.57	10.21	10.42	-12.34	--	10.10	10.05	67.72

NAVSTAR GPS User Equip
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.178	-0.002	-0.138	0.004	--	0.003	--	0.012	-0.121	0.057

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) BLK IIR DEVELOPMENT:	Initial Contract Price		
	Target	Ceiling	Qty
MARTIN MARIETTA, VALLEY FORGE, PA F04701-89-C-0073, FPIF Award: June 1, 1989 Definitized: June 1, 1989	$92.0	$104.3	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$118.9	$135.9	0	$137.6	$140.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-24.1	$-8.4
Cumulative Variances To Date (02/28/93)	$-25.4	$-3.9
Net Change	$-1.3	$4.5

Explanation of Change:

Note: GE Astro-Space Division was purchased by Martin Marietta in Nov 92.

The $1.3M increase in the cost variance is due to events in the

15. (U) Contract Information (Cont'd):
following areas: Telemetry, Tracking and Command (TT&C), L-Band Subsystem (LBS), support equipment, Electrical Power Subsystem (EPS) and structures. TT&C is continuing to overrun due to underestimating the design cost of the Spacecraft Processor Unit (SPU). The Command Decoder design increased from 5 to 9 circuit boards and the payload control electronics design had additional requirements added after Incremental Design Review (ICDR). The LBS variance is due to unbudgeted reworks of the direct current converter and changes to the housing configuration. This is being caused by the design complexity of the spacecraft bus harness and the power regulator. The support equipment increase is due to direction to redesign telecom simulator on space vehicle zero. The EPS delta is driven by a weight reduction effort and redesign of the battery. Finally, the increase in the structure cost variance is a result of additional effort needed to rework the harness design.

The decrease in the schedule variance is attributable to an increase in performance against scheduled work as the contract nears completion in the navigation payload, support equipment and system test and evaluation areas. As a result, Martin Marietta has been able to claim additional earned value upon completion of several significant milestones.

There is no impact to the contract or the program.

The total change in the contract value from $99.2M to $118.9M is a result of the Operate-Through contract modification being placed on contract.

The program manager's Estimate At Completion (EAC) is higher than the contractors due to technical risk. Both estimates are above the contract ceiling of $135.9M, which is the limit of government liability and is within approved funding.

Since the contract is 94% complete, this is the final time this contract will be reported in the SAR.

b.(U) Procurement --

(U) LAUNCH SERV BLK II/IIA:	Initial Contract Price		
	Target	Ceiling	Qty
ROCKWELL INTERNATIONAL, SEAL BEACH, CA			
F04701-83-C-0031, CPFF	$40.6	N/A	0
Award: May 20, 1983			
Definitized: May 20, 1983			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$141.1	N/A	0	$135.5	$141.1

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.3	$-1.8
Cumulative Variances To Date (01/29/93)	$0.0	$-2.9
Net Change	$0.3	$-1.1

Explanation of Change:

The improvement in the Cost Variance is a result of labor and overhead rates being lower than anticipated.

The Schedule Variance is due to: 1) The rework of the Control Electronic Unit (CEU), 2) Resolution of the Reaction Wheel problem, and 3) Saft Battery Project problems. The Saft Battery Project is behind schedule due to difficulties which, occurred during vibration testing of the qualification unit. There is no impact to the contract or the program.

The current contract price increased $6.9M due to contract modifications being added for SAFT Battery Procurement, Repair of Government Property, and the L3 Relay Mod.

The program manager's Estimate At Completion (EAC) is higher than the contractor's EAC due to possible future technical risk. The program manager's EAC does not exceed current target price.

(U) BLOCK IIR SATELLITE PROD:
MARTIN MARIETTA, VALLEY FORGE, PA
F04071-89-C-0073, FFP
Award: June 1, 1989
Definitized: October 31, 1990

Initial Contract Price		
Target	Ceiling	Qty
$580.4	N/A	20

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$604.8	N/A	20	$604.8	$604.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$2.9	$-18.7
Cumulative Variances To Date (02/28/93)	$-4.6	$-14.6
Net Change	$-7.5	$4.1

Explanation of Change:

This FFP contract requires modified Cost Performance Reporting.

Note: GE Astro-Space Division was purchased by Martin Marietta in Nov 92.

15. (U) Contract Information (Cont'd):

The main cost drivers in the increased cost variance are the Manufacturing, Long Lead Parts and Program Management areas. The Manufacturing cost variance increase is due to an accounting error which placed actual costs in the wrong account. This is in the process of being corrected. The Long Lead Parts variance is due to late receipt of high dollar value parts. The fact that the parts have been paid for but not received (i.e. no BCWP taken) caused a cost variance. The Program Management variance is a result of increased support requirements for the Spacecraft Bus Systems.

The favorable schedule variance is the result of efforts in the Navigation Payload and Altitude Determination and Control (AD&C) areas. The original schedule variances were a result of delays caused by incorporating Operate Through work. Work around plans were implemented to recover the lost time which has led to some makeup in schedule.

There is no impact to the contract or the program.

The total change in the contract value from $580.4M to 604.8M consists of two changes: first, $4.4M was reduced from the $25.0M amount previously added for the L-Band test set and, secondly, $28.8M was added for the Operate-Through contract modification.

(U) CONT SYS RESIDUAL TASK:	Initial Contract Price Target	Ceiling	Qty
IBM - FEDERAL SYSTEMS CO, GAITHERSBURG, MD F04701-90-C-0009, CPAF Award: November 15, 1989 Definitized: November 15, 1989	$10.1	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$82.9	N/A	0	$101.5	$122.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (02/12/93)	$-16.8	$-4.7
Net Change	$-16.8	$-4.7

Explanation of Change:

This contract consists of two primary tasks: 1) Residual tasks comprised of Operational Release (OR) 5.30 for Mission Scheduler upgrades, performance improvements, and man machine interface improvements, and OR 5.40 for L-Band State of Health and performance improvements, and 2) The development of OR 6.0, the upgrade for the

15. (U) Contract Information (Cont'd):
Block IIR satellite and Space Vehicle Positioning Rehost capability.

The cost variance is due to problems experienced with software (S/W) development standard (Mil-Std 2167A) compliance, conversion of "C" S/W code to Ada S/W code, problems that arose during testing of OR 5.30A, Ada compiler migration problems, and higher than anticipated Program Management support levels. A majority of the cost variance (79%) is due to OR 5.30. This release (OR 5.30) was split into two deliveries: OR 5.30A (Host S/W) and OR 5.30B (Mission Scheduler S/W) to minimize impacts to the user.

The schedule variance is due in part to the contractor's problems with S/W conversion (outlined in the previous paragraph), as well as problems experienced with the Series 1 Upload/Download function, Ada compiler migration problems and data dependencies between the satellite development contract and OR 6.0 (Block IIR S/W). OR 5.30A has been delivered. OR 5.30B is scheduled for a May 93 delivery which will end the OR 5.30 effort.

There is no impact to the contract or the program.

The technical approach to OR 5.40 has changed to reduce cost and schedule risk. IBM and the JPO are working closely to develop and implement a corrective action plan to mitigate cost and schedule risk on all remaining effort. An "Associate Contractor Clause" is being implemented on the satellite contract to mitigate potential schedule slips and ensure closer coordination between the two contractor's.

The program manager's Estimate At Completion (EAC) is higher than the contractor's due to reserve for technical risk on future effort. Program requirements have been reprioritized to fund the overrun.

This is the first time this contract is being reported in the SAR.

(U) BLKII/IIA SATELLITE PRD:
ROCKWELL INTERNATIONAL, SEAL BEACH, CA
F04701-83-C-0031, FFP
Award: May 20, 1983
Definitized: May 20, 1983

Initial Contract Price		
Target	Ceiling	Qty
$1171.0	N/A	28

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1352.6	N/A	28	$1355.0	$1355.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

There is no cost reporting on this Firm-Fixed-Price contract.

The current contract price increased from $1346.3M to $1352.6M due to contract modifications being added for reaction wheel fixes, and for settlement of claims on the Data Transfer System and the Electro Magnetic Pulse (EMP) sensor.

The difference between the current contract price and both the contractor's and program manager's estimate at completion is the estimated value of outstanding claims against the contract.

This contract is over 90% complete and will no longer be reported.

(U) RECEIVERS:

	Initial Contract Price		
	Target	Ceiling	Qty
SCI TECHNOLOGY, INC., HUNTSVILLE, AL F04701-90-C-0086, FFP Award: September 24, 1990 Definitized: September 24, 1990	$17.1	N/A	599

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$53.2	N/A	1744	$53.2	$53.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variances are not required on this Firm-Fixed-Price contract. The dollars are reported quarterly by a Contract Funds Status Report (CFSR). Currently, the contract is 55.5% spent and 45% complete.

This is the first time this contract is being reported in the SAR.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 57.1% (20 yrs/35 yrs)

(2) Percent Program Cost Appropriated: 48.6% ($5306.0 / $10914.0)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

NAVSTAR GPS Satellite

Appropriation	Prior Years (FY74-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	1205.0	39.0	31.1	79.9	1355.0
Procurement	1720.4	176.5	198.1	673.5	2768.5
MILCON	7.3	-	-	-	7.3
O&M	-	-	-	-	-
Total	2932.7	215.5	229.2	753.4	4130.8

1/ Percent Program Completed: 60.6% (20 yrs/33 yrs)

2/ Percent Program Cost Appropriated: 71.0% ($2932.7/$4130.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

NAVSTAR GPS User Equip

Appropriation	Prior Years (FY74-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2008)	Total
RDT&E	1236.3	66.5	46.1	314.2	1663.1
Procurement	1100.4	346.2	418.1	3177.8	5042.5
MILCON	-	-	-	-	-
O&M	36.6	5.3	4.6	31.1	77.6
Total	2373.3	418.0	468.8	3523.1	6783.2

1/ Percent Program Completed: 57.1% (20 yrs/35 yrs)

2/ Percent Program Cost Appropriated: 35.0% ($2373.3/$6783.2)

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS Satellite

c. (U) Annual Summary -- NAVSTAR GPS Satellite

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1974				9.4	6.4	6.4	6.4	
1975				25.5	19.1	19.1	19.1	9.8
1976				72.2	58.9	58.9	58.9	9.4
197T				12.0	10.6	10.6	10.6	4.9
1977				56.3	50.2	50.2	50.2	4.6
1978				55.9	53.3	53.3	53.3	7.1
1979				53.9	56.0	56.0	56.0	7.1
1980				88.3	101.9	101.9	101.9	9.4
1981				78.8	100.7	100.7	100.7	11.9
1982				100.6	137.4	137.4	137.4	9.2
1983				67.3	96.2	96.2	96.2	4.9
1984				67.8	100.7	100.7	100.7	3.9
1985				49.0	75.2	75.2	75.2	3.4
1986				28.7	45.1	45.1	45.1	2.8
1987				21.3	35.0	35.0	35.0	2.7
1988				15.3	25.9	25.9	25.9	3.0
1989				25.7	45.1	45.1	44.9	4.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS Satellite

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1990				18.0	32.9	32.7	32.5	4.0
1991				24.8	46.9	46.9	41.8	4.3
1992				26.5	51.3	50.9	45.2	2.8
1993				28.4	56.2	43.5	21.3	2.4
1994				19.2	39.0			2.4
1995				15.0	31.1			2.3
1996				9.5	20.2			2.3
1997				7.6	16.5			2.2
1998				1.9	4.1			2.2
1999				1.9	4.3			2.2
2000				1.9	4.5			2.2
2001				2.0	4.7			2.2
2002				2.0	4.8			2.2
2003				2.0	5.0			2.2
2004				2.0	5.1			2.2
2005				2.1	5.3			2.2
2006				2.0	5.4			2.2
Subtot	12			994.8	1355.0	1191.7	1158.3	

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS Satellite

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force								
1982				13.2	20.1	20.1	20.1	9.5
1983				69.3	111.5	111.5	111.5	9.0
1984	1		25.2	152.7	256.0	256.0	256.0	8.0
1985	6		130.7	192.1	331.4	331.4	331.4	3.4
1986	9		198.5	112.6	203.4	203.4	203.4	2.7
1987	8		136.6	37.8	71.2	71.2	71.2	2.7
1988	4		109.8	46.0	90.1	90.1	90.1	3.0
1989		29.7		33.1	67.5	67.4	43.1	4.2
1990		12.1		20.3	42.2	42.0	19.6	4.0
1991		23.1		73.1	156.0	156.0	122.9	4.3
1992	4		65.8	82.0	176.9	159.2	28.0	2.8
1993	4		69.9	79.5	175.6	134.3		2.4
1994	4		68.6	76.3	172.3			2.4
1995	5		76.5	82.9	191.4			2.3
1996	4		71.8	55.3	130.6			2.3
1997		26.7		39.5	95.3			2.2
1998		4.4		17.7	43.7			2.2
1999		3.7		17.4	43.8			2.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS Satellite

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
2000		3.7		17.5	45.1			2.2
2001		3.7		17.7	46.5			2.2
2002		3.7		17.8	48.0			2.2
2003		3.7		18.0	49.6			2.2
2004		3.7		18.2	51.1			2.2
2005		3.7		18.4	52.8			2.2
2006		3.7		18.6	54.5			2.2
Subtot	49	125.6	953.4	1327.0	2726.6	1642.6	1297.3	
Appropriation: 3080 Other Procurement, Air Force								
1987				1.5	2.6	2.6	2.2	2.7
1988				4.7	8.3	8.3	7.0	3.0
1989								4.2
1990								4.0
1991								4.3
1992				0.9	1.8	1.8		2.8
1993				2.8	5.8	2.3		2.4
1994				2.0	4.2			2.4

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS Satellite

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
1995				3.1	6.7			2.3
1996				0.4	0.9			2.3
1997				0.5	1.2			2.2
1998				1.4	3.1			2.2
1999				3.1	7.3			2.2
Subtot				20.4	41.9	15.0	9.2	
Appropriation: 3300 Military Construction, Air Force								
1984				4.7	7.3	7.3	7.3	3.8
Subtot				4.7	7.3	7.3	7.3	
Grand Total	61	125.6	953.4	2346.9	4130.8	2856.6	2472.1	

Note: Expenditures/Obligations reflect Program Office records as of 31 Mar 93.

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

c. (U) Annual Summary -- NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1974				1.8	1.2	1.2	1.2	
1975				4.4	3.3	3.3	3.3	9.8
1976				7.8	6.4	6.4	6.4	9.4
197T				1.8	1.6	1.6	1.6	4.9
1977				8.4	7.5	7.5	7.5	4.6
1978				7.3	7.0	7.0	7.0	7.1
1979				9.3	9.7	9.7	9.7	7.1
1980				11.7	13.5	13.5	13.5	9.4
1981				13.8	17.7	17.7	17.7	11.9
1982				5.1	7.0	7.0	7.0	9.2
1983				7.5	10.7	10.7	10.7	4.9
1984				3.9	5.8	5.8	5.8	3.9
1985				7.6	11.6	11.6	11.6	3.4
1986				6.7	10.5	10.5	10.5	2.8
1987				2.7	4.5	4.5	4.5	2.7
1988				5.9	10.0	10.0	10.0	3.0
1989				5.1	8.9	8.9	8.9	4.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1990				2.7	5.0	5.0	4.7	4.0
1991				3.3	6.3	6.3	5.5	4.3
Subtot	13			116.8	148.2	148.2	147.1	
Appropriation: 2031 Aircraft Procurement, Army								
1986	67	4.0	4.0	7.7	13.7	13.7	13.7	2.7
1987	133	0.9	3.8	6.3	11.6	11.6	11.6	2.7
Subtot	200	4.9	7.8	14.0	25.3	25.3	25.3	
Appropriation: 2035 Other Procurement, Army								
1986	70	3.8	1.6	5.6	9.2	9.2	9.2	2.8
1987	60	1.3	1.2	3.1	5.3	5.3	5.3	2.7
1988	147	7.0	3.9	11.7	20.8	20.8	20.0	3.0
1989	175	4.3	3.0	8.0	14.6	14.6	12.3	4.2
1990	1092	4.0	5.3	10.4	19.7	19.7	13.6	4.0
1991	74	1.0	2.4	6.1	11.8	11.2	7.1	4.3
1992	37	6.2	2.2	13.7	27.3	23.6	8.0	2.8
1993	11030	2.9	9.5	13.3	27.2	11.0	2.7	2.4

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1994	12705	5.3	11.0	20.6	43.0			2.4
1995	12675	5.7	8.7	15.6	33.3			2.3
1996	12866	5.4	12.5	20.6	45.0			2.3
1997	15335	4.6	13.3	20.3	45.3			2.2
1998	16595	4.9	12.5	19.6	44.7			2.2
1999	560	4.9	12.1	19.7	45.9			2.2
2000	393	4.3	13.4	19.9	47.5			2.2
2001	343	4.2	13.1	19.4	47.3			2.2
2002	437	4.1	12.9	18.9	47.1			2.2
2003	1242	3.0	13.7	18.3	46.6			2.2
2004	1225	2.9	18.7	23.2	60.3			2.2
Subtot	87061	79.8	171.0	288.0	641.9	115.4	78.2	
Army	87274	84.7	178.8	418.8	815.4	288.9	250.6	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1974				6.0	4.1	4.1	4.1	
1975				8.7	6.5	6.5	6.5	9.8
1976				13.5	11.0	11.0	11.0	9.4

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
197T				1.8	1.6	1.6	1.6	4.9
1977				7.4	6.6	6.6	6.6	4.6
1978				3.8	3.6	3.6	3.6	7.1
1979				9.5	9.9	9.9	9.9	7.1
1980				8.8	10.1	10.1	10.1	9.4
1981				13.4	17.1	17.1	17.1	11.9
1982				22.0	30.0	30.0	30.0	9.2
1983				19.7	28.1	28.1	28.1	4.9
1984				39.9	59.3	59.3	59.3	3.9
1985				38.3	58.8	58.8	58.8	3.4
1986				35.8	56.2	56.2	56.2	2.8
1987				39.1	64.3	64.3	64.3	2.7
1988				29.1	49.4	49.4	49.4	3.0
1989				22.6	39.6	39.6	39.6	4.2
1990				23.1	42.2	42.2	39.8	4.0
1991				26.2	49.5	49.5	43.3	4.3
1992				25.4	49.2	48.7	33.8	2.8
1993				24.9	49.4	27.4	15.8	2.4

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1994				24.6	49.9			2.4
1995				18.1	37.5			2.3
1996				15.7	33.4			2.3
1997				15.1	32.8			2.2
1998				8.3	18.3			2.2
1999				6.1	13.8			2.2
2000				2.4	5.5			2.2
2001								2.2
2002								2.2
2003								2.2
2004								2.2
2005								2.2
Subtot	89			509.3	837.7	624.0	588.9	
Appropriation: 1109 Procurement, Marine Corps								
1989	456		2.2	2.2	4.1	4.1	3.4	4.2
1990	504		0.7	0.8	1.6	1.6	1.1	4.0
1991								4.3

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1109 Procurement, Marine Corps (Cont'd)								
1992								2.8
1993	30	0.1	0.1	6.7	13.7	5.5	1.3	2.4
1994	2770		2.1	7.3	15.2			2.4
1995	1104	0.1	0.7	5.5	11.8			2.3
1996								2.3
Subtot	4864	0.2	5.8	22.5	46.4	11.2	5.8	
Appropriation: 1506 Aircraft Procurement, Navy								
1988	42		2.0	2.2	4.3	4.3	4.3	3.0
1989	108		4.4	5.0	10.0	10.0	9.2	4.2
1990	118		4.0	4.6	9.6	9.6	8.3	4.0
1991	24		1.0	1.9	4.0	3.9	1.5	4.3
1992	246		16.0	17.4	38.0	23.0	6.3	2.8
1993	202		8.6	12.4	27.6	15.2	1.0	2.4
1994	611		26.7	48.4	110.4			2.4
1995	590		24.0	42.9	100.2			2.3
1996	585		26.0	47.6	113.5			2.3
1997	670		34.5	54.6	133.1			2.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
1998	779		49.7	57.0	142.0			2.2
1999	335		16.3	29.3	74.6			2.2
2000	308		19.5	34.7	90.3			2.2
2001								2.2
2002								2.2
Subtot	4618		232.7	358.0	857.6	66.0	30.6	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1987	11		0.1	0.8	1.4	1.4	1.4	2.7
1988	6		0.1	0.5	1.0	1.0	1.0	3.0
1989	11		0.4	0.7	1.5	1.5	1.2	4.2
1990	17		0.5	1.1	2.3	2.3	1.5	4.0
1991	11		0.3	0.4	0.8	0.8	0.5	4.3
1992	11		0.5	0.8	1.8	1.8	0.5	2.8
1993	9		0.4	0.7	1.6	0.6	0.2	2.4
1994	3		0.3	0.5	1.2			2.4
1995	2		0.1	0.2	0.5			2.3
1996	1		0.1	0.1	0.3			2.3

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1997	4		0.2	0.3	0.8			2.2
1998	1			0.1	0.2			2.2
1999	2		0.1	0.2	0.4			2.2
Subtot	89		3.1	6.4	13.8	9.4	6.3	

NOTE: Recurring dollars in FY98 are $0.048.

Appropriation: 1810 Other Procurement, Navy

1986	62	5.7	1.0	12.1	20.0	20.0	20.0	2.8
1987	148	8.1	1.4	13.8	23.6	23.6	23.6	2.7
1988	188	1.3	4.4	7.4	13.2	13.2	13.2	3.0
1989	133	0.4	2.3	6.1	11.2	11.2	9.4	4.2
1990	79	0.6	0.5	3.8	7.2	7.2	4.7	4.0
1991	38	0.1	2.6	3.8	7.3	6.9	4.4	4.3
1992	130	0.1	6.7	8.5	16.9	16.2	6.8	2.8
1993	1840	0.1	5.7	8.5	17.4	7.0	1.7	2.4
1994				3.0	6.2			2.4
1995				7.7	16.5			2.3
1996								2.3

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1997								2.2
Subtot	2618	16.4	24.6	74.7	139.5	105.3	83.8	
Appropriation: 1804 Operation and Maintenance, Navy								
1988				1.6	2.8	2.8	2.8	3.0
1989				2.6	4.6	4.6	4.6	4.2
1990				6.8	12.5	12.5	12.5	4.0
1991				3.3	6.2	6.2	3.5	4.3
1992				1.2	2.3	2.3	1.3	2.8
1993				2.3	4.6	2.7	2.0	2.4
1994				1.9	3.8			2.4
1995				1.6	3.4			2.3
1996				1.9	4.1			2.3
1997				1.7	3.7			2.2
1998				1.9	4.3			2.2
1999				1.2	2.8			2.2
2000								2.2
2001								2.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1804 Operation and Maintenance, Navy (Cont'd)								
2002								2.2
Subtot				28.0	55.1	31.1	26.7	
Navy	12278	16.6	266.2	998.9	1950.1	847.0	742.1	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1974				1.5	1.0	1.0	1.0	
1975				6.4	4.8	4.8	4.8	9.8
1976				19.5	15.9	15.9	15.9	9.4
197T				3.1	2.7	2.7	2.7	4.9
1977				15.5	13.8	13.8	13.8	4.6
1978				14.4	13.7	13.7	13.7	7.1
1979				18.9	19.6	19.6	19.6	7.1
1980				29.8	34.4	34.4	34.4	9.4
1981				19.2	24.5	24.5	24.5	11.9
1982				20.5	28.0	28.0	28.0	9.2
1983				18.1	25.9	25.9	25.9	4.9
1984				13.3	19.8	19.8	19.8	3.9
1985				13.5	20.7	20.7	20.7	3.4

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1986				16.4	25.8	25.8	25.8	2.8
1987				17.2	28.3	28.3	28.3	2.7
1988				22.3	37.8	37.8	37.3	3.0
1989				23.6	41.4	39.7	39.7	4.2
1990				17.9	32.7	32.7	30.8	4.0
1991				6.7	12.6	12.6	11.0	4.3
1992				7.6	14.7	14.6	9.5	2.8
1993				10.3	20.4	7.8	6.5	2.4
1994				8.0	16.2			2.4
1995				4.1	8.6			2.3
1996				5.0	10.5			2.3
1997				4.8	10.5			2.2
1998				4.7	10.5			2.2
1999				4.6	10.5			2.2
2000				7.4	17.1			2.2
2001				7.4	17.5			2.2
2002				7.4	17.9			2.2
2003				7.4	18.3			2.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
2004				7.4	18.7			2.2
2005				7.4	19.1			2.2
2006				7.4	19.5			2.2
2007				7.4	19.9			2.2
2008				7.4	20.4			2.2
Subtot	146			413.5	673.7	424.1	413.7	
Appropriation: 3010 Aircraft Procurement, Air Force								
1985		3.2		4.7	8.0	8.0	8.0	3.4
1986	70	5.5	7.7	23.8	42.4	42.4	42.4	2.7
1987	299	4.5	20.6	40.3	74.8	74.8	74.8	2.7
1988	351	6.9	20.8	53.7	104.5	104.5	104.5	3.0
1989	327	6.8	17.7	57.8	116.4	116.4	62.4	4.2
1990	207	5.5	7.1	27.4	56.8	56.8	27.6	4.0
1991	36	2.2	5.7	12.8	27.6	27.6	10.1	4.3
1992	43	8.8	4.4	45.5	99.2	64.8	16.6	2.8
1993	376	5.8	13.1	43.6	97.3	30.6	2.5	2.4
1994	329	10.2	21.0	72.2	164.9			2.4

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1995	693	16.3	37.9	108.0	252.0			2.3
1996	987	11.6	48.7	142.4	339.7			2.3
1997	1278	9.2	57.9	149.5	364.5			2.2
1998	641	6.4	29.4	109.2	272.2			2.2
1999	317	7.4	16.4	86.8	221.0			2.2
2000	412	6.3	18.6	77.8	202.5			2.2
2001	94	6.2	2.4	51.9	138.1			2.2
2002	84	6.2	2.2	30.8	83.7			2.2
2003	84	6.1	2.1	30.6	85.1			2.2
2004	84	6.0	3.1	30.6	87.0			2.2
2005	60	5.9	1.6	30.0	87.0			2.2
2006	24	5.8	0.8	29.0	86.0			2.2
2007	24	5.8	0.8	29.0	87.9			2.2
2008	24	5.7	0.8	29.0	89.8			2.2
Subtot	6844	164.3	340.8	1316.4	3188.4	525.9	348.9	

Note: The Air Force is committed to install GPS in all its aircraft by the year 2000. FY94 funding reflects this direction, however FY95 through FY2000 will be adapted during the POM cycle to reflect this direction. FY95 and beyond funding for aircraft modifications are now reflected against the aircraft SPM PE's vice the GPS PE.

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3080 Other Procurement, Air Force								
1986	87	1.1	2.3	6.2	10.3	10.3	10.3	2.8
1987	121	0.6	2.2	6.4	11.0	11.0	11.0	2.7
1988	757	0.1	3.8	8.3	14.7	14.7	14.7	3.0
1989	445	0.1	5.7	7.1	13.1	13.1	11.0	4.2
1990	179		4.3	5.6	10.7	10.7	7.1	4.0
1991								4.3
1992	101		0.4	2.5	4.9	4.0	1.4	2.8
1993	2612		2.1	3.6	7.4	4.7		2.4
1994	859		0.7	2.5	5.3			2.4
1995	795		0.5	1.8	3.8			2.3
1996	513		0.3	1.4	3.1			2.3
1997	489		0.2	1.5	3.3			2.2
1998	537		0.2	1.4	3.3			2.2
1999	591		0.6	1.5	3.4			2.2
2000	591		0.6	1.5	3.6			2.2
2001	591		0.6	1.5	3.7			2.2
2002	591		0.6	1.5	3.7			2.2
2003	591		0.6	1.5	3.8			2.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
2004	591		0.6	1.5	3.9			2.2
2005	590		0.6	1.5	4.0			2.2
2006	590		0.6	1.5	4.1			2.2
2007	590		0.6	1.5	4.2			2.2
2008	590		0.6	1.5	4.3			2.2
Subtot	13401	1.9	28.7	63.3	129.6	68.5	55.5	
Appropriation: 3400 Operation & Maintenance, Air Force								
1992				0.3	0.5	0.5	0.5	2.8
1993				1.6	3.1	1.9		2.4
1994				0.7	1.5			2.4
1995				0.6	1.2			2.3
1996				0.6	1.2			2.3
1997				0.5	1.1			2.2
1998				0.5	1.1			2.2
1999				0.5	1.1			2.2
2000				0.5	1.2			2.2
2001				0.5	1.2			2.2

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3400 Operation & Maintenance, Air Force (Cont'd)								
2002				0.5	1.2			2.2
2003				0.5	1.3			2.2
2004				0.5	1.3			2.2
2005				0.5	1.3			2.2
2006				0.5	1.4			2.2
2007				0.5	1.4			2.2
2008				0.5	1.4			2.2
Subtot				9.8	22.5	2.4	0.5	
USAF	20391	166.2	369.5	1803.0	4014.2	1020.9	818.6	
Appropriation: 0400 RDT&E, Defense Agencies								
1989				0.1	0.2	0.2	0.2	4.2
1990				1.2	2.1	2.1	2.1	4.0
1991				0.2	0.4	0.4	0.3	4.3
1992				0.1	0.1	0.1	0.1	2.8
1993				0.2	0.3	0.2	0.1	2.4
1994				0.2	0.4			2.4
Subtot				2.0	3.5	3.0	2.8	

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

DoD				2.0	3.5	3.0	2.8	
Grand Total	119943	267.5	814.5	3222.7	6783.2	2159.8	1814.1	

Appropriation 0400 RDT&E, Defense Agencies is Marine Corps RDT&E - PE 26626M-1319 Appn.

Note: Expenditures/Obligations reflect Program Office Estimates as of 16 April 1993.

17. (U) Production Rate Data:

NAVSTAR GPS Satellite

a. (U) Production Baseline Rate

No steady state production rate was approved.

17b. (U) Production Rate Data (Cont'd):
NAVSTAR GPS Satellite

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	176.5	176.5		0.0	N/A
Procurement Qty	4	4		0	N/A
Proc. Unit Cost	44.125	44.125	N/A	0.000	N/A
FY 1995					
Procurement Cost		198.1		N/A	N/A
Procurement Qty		5		N/A	N/A
Proc. Unit Cost	N/A	39.620	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		673.5		N/A	N/A

Note: Sections a and b reflect data for Block IIR satellites.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	12/12
Procurement	28/24

d. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 0 - @ Peak Rate: 0.6/mo			
FY 79 Base-Year $	20.336	25.543	25.000
Then Year $	54.812	46.029	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 79 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

NOTE: Sections c and d reflect data for Block II/IIA satellites.

NAVSTAR GPS User Equip

a. (U) Production Baseline Rate

17a. (U) Production Rate Data (Cont'd):

NAVSTAR GPS User Equip

No steady state production rate has been approved.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	346.2	346.2		0.0	N/A
Procurement Qty	17277	17277		0	N/A
Proc. Unit Cost	0.020	0.020	N/A	0.000	N/A
FY 1995					
Procurement Cost		418.1		N/A	N/A
Procurement Qty		15859		N/A	N/A
Proc. Unit Cost	N/A	0.026	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		3177.8		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	248/248
Procurement	4818/4818

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 26889 - @ Peak Rate: 390/mo			
FY 79 Base-Year $	0.1	0.1	0.1
Then Year $	0.2	0.2	0.0
@ Qty 0 (1st three years) - @ Peak Rate: 0/mo			
FY 79 Base-Year $	0.0	0.0	0.0
Then Year $	0.0	0.0	0.0

Note: For sections 17a & b NAVSTAR GPS User Equipment (UE), the UE acquisition consists of 25 different components or line replaceable units (LRU's). The LRU's are grouped in six broad categories; receivers, antenna electronics, antennas, control display units, mounts and support equipment. The UE set consists of one or more of the LRU categories based on individual platform needs. Minimum and maximum manufacturing rates vary with the LRU being procured from five different contractors. Due to this complexity, the program office is working towards providing this information in future SARs.

18. (U) Operating and Support Costs:
NAVSTAR GPS Satellite

a. (U) Assumptions and Ground Rules --

Operations and support costs include all costs of operating, maintaining, and supporting the NAVSTAR GPS spacecraft from the dedicated Master Control Station (MCS) located at Falcon AFB CO. Also included are the costs for operating, maintaining, and supporting four dedicated GPS Ground Antennas (GAs) located at Cape Canaveral AFS FL, Kwajalein Atoll, the Ascension Islands, and Diego Garcia; and five monitor stations located at Falcon AFB, Maui, HI, Kwajalein Atoll, the Ascension Islands, and Diego Garcia. Satellite operations at the MCS include mission planning, mission payload operations, and monitoring of satellite state of health. GAs transmit navigation data uploads and commands to the GPS spacecraft and receive telemetry data from the spacecraft. Monitor stations receive mission payload data and transfers this data to the MCS to ensure spacecraft are operating as desired. Costs also include GPS-dedicated communications and contractor support for software maintenance. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements.

There is no applicable antecedent program.

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Navstar GPS Sat	Avg Annual Cost Per Antecedent
O&M	3.9	N/A
Total	3.9	N/A

Note: Costs reflect funds controlled by System Program Director (SPD).

18c. (U) Operating and Support Costs (Cont'd):
NAVSTAR GPS Satellite

c. (U) Contractor Support Costs — (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	9.5	7.2	6.5	28.4	51.6
Total	9.5	7.2	6.5	28.4	51.6

Note: Costs reflect funds controlled by SPD.

NAVSTAR GPS User Equip

a. (U) Assumptions and Ground Rules —

(1) The operations & support costs are the direct costs to repair, replenish & support the GPS UE. The maintenance costs includes the material and labor costs at the organizational, intermediate, & depot levels. The training costs are necessary to maintain the required quantity of maintenance and operations personnel. The software support costs include all costs to provide life cycle software engineering for GPS UE. The support equipment support cost includes the cost of all necessary support and maintenance of the GPS user equipment. The sustaining investment costs include the cost of replenishment spares of air, sea, and ground sets, their respective batteries of memory cells, and their support equipment.

(2) Contracting Engineering Technical Services (CETS): The Air Force needs contractor technical experts to perform training and consultation to enable maintenance, support and logistics personnel to become proficient in supporting GPS.

There is no applicable antecedent program.

18b. (U) Operating and Support Costs (Cont'd):
NAVSTAR GPS User Equip

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Navstar GPS User	Avg Annual Cost Per Antecedent
BELOW DEPOT LEVEL	2.4	N/A
DEPOT LEVEL	3.9	N/A
TRAINING	1.6	N/A
TRANSPORTATION	0.3	N/A
SOFTWARE SUPPORT	1.1	N/A
SE SUPPORT	0.1	N/A
SUSTAINING INVESTMENT	26.4	N/A
SYSTEM/PROJECT MGT	3.3	N/A
Total	39.1	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	---	---	---	---	---
Air Force	4.8	---	---	---	4.8
Navy	25.2	---	---	---	25.2
Marine	0.3	---	---	---	0.3
Army	---	---	---	---	---
Total	30.3	---	---	---	30.3

N-7 AV-8B

92-109

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AV-8B HARRIER II

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
AV-8B/Attack, V/STOL, Close Air Support (HARRIER II)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
AIR ASW, Assault, & Special Mission Functions
1411 Jefferson Davis Hwy.
Washington, DC 20361-1257
Col Richard Priest
Assigned: February 15, 1991
AV 222-8325 COMM (703) [redacted]

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604214N
PROCUREMENT:
APPN 1506 ICN 0124 (Navy)
MILCON:
PE 0206496M, 0206497M

[redacted]

93 646

[redacted]

5. (U) Related Programs:
F/A-18, F-15, GR5 (UK Collaborative Program), AV-8B(s) Spanish Program, AV-8B (Spain and Italy Collaborative Program).

6. (U) Mission and Description:
The AV-8B (HARRIER II) is a second-generation, Vertical/Short Take-Off and Landing (V/STOL) light-attack jet aircraft utilized by the Marine Corps. The primary mission of the AV-8B is to provide responsive close air support for the ground forces. This single-piloted, advanced V/STOL aircraft can operate from short fields, forward sites, roads and surface ships providing minimum response time to target. The aircraft incorporates basic aerodynamic improvements such as a composite super critical high-lift wing, leading edge root extension, engine inlet modification, lift improvement devices, composite forward fuselage, and modern avionics package. The AV-8B is a transonic aircraft designed to carry up to 9200 lbs. of conventional ordnance including four AIM-9 Sidewinder missiles and a 25mm high rate of fire gattling gun. The Marine Corps has replaced all of its AV-8As and A-4M squadrons with the newer AV-8B, thus transitioning to an all Harrier II light-attack force. A two-seat version of the aircraft was introduced in the Marine Corps Training Squadron with delivery of the first production TAV-8B in July 1987. A Night Attack version of the aircraft incorporated a Forward Looking Infrared Sensor (FLIR) was introduced to the fleet with the delivery of the first Night Attack aircraft in September 1989.

7. (U) Program Highlights:
a. (U) Significant Historical Developments —
The General and Full Integration MOU was signed by Italy, Spain and the United States on 28 September 1990.

The Production MOU was signed by Italy, Spain and the United States on 30 December 1992.

b. (U) Significant Developments Since Last Report —
The Spanish Navy contract for eight aircraft was executed with McAir on 26 February 1993.

The AV-8B Remanufacture Program will begin in FY1994 with the remanufacture of four aircraft at $144.6M, four aircraft in FY1995 at $143.3M, thirteen aircraft in FY1996 at $352.7M, fifteen aircraft in FY1997 at $362.4M, fifteen aircraft in FY1998 at $368.1M and fifteen in FY1999 at $376.5.

RDT&E,N in FY1994 through FY1999 will be in support of radar and Missile Approach Warning System (MAWS).

Deliveries for the AV-8B production program are 90% complete,

7b. (U) Program Highlights (Cont'd):

consequently, this is the final SAR for the AV-8B production program.

The AV-8B is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date — None.

8. (U) Threshold Breaches:
There are currently no breaches of the 31 December 1988 Approved Program Baseline. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones —

	Development Estimate	Approved Program	Current Estimate
Program Initiated Milestone I (DSARC)	MAR 76	MAR 76	MAR 76
First Flight YAV-8B Prototype	DEC 78	NOV 78	NOV 78
Milestone II (DSARC)	JUN 79	JUL 79	JUL 79
FSD Contract Award	JUN 79	AUG 79	AUG 79
Critical Design Review	JUL 80	JUL 80	JUL 80
First Flight AV-8B (FSD)	OCT 81	NOV 81	NOV 81
Award of Production Contract	APR 82	APR 82	APR 82
TECHEVAL Avionics	SEP 83	OCT 84	OCT 84
TECHEVAL Performance	SEP 83	OCT 84	OCT 84
OPEVAL	DEC 83	MAR 85	MAR 85
Milestone IIIB (DSARC)	APR 85	MAY 85	MAY 85
IOC (AV-8B)	JUN 85	AUG 85	AUG 85
IOC (TAV-8B)	N/A	JUL 88	SEP 88
IOC (Night Attack)	N/A	MAY 90	MAY 90

b. (U) Previous Change Explanations —

TECHEVAL Avionics, TECHEVAL Performance and OPEVAL slipped due to lack of sufficient instrumented test program and technical difficulties. New milestones added are IOC TAV-8B and IOC Night Attack. Delivery of 7th TAV-8B September 1988. Delivery of 20th Night Attack airplane.

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:
DCP approved 16 January 1987.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1988.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Weight (lbs) Empty	12,750	13126	/ 13126	12,835	13,126
Speed Maximum (Mach No)	.91	.91	/ .91	.905	.91
Dimensions (ft)					
Length	46.33	46.33	/ 46.33	46.33	46.33
Height	11.65	11.65	/ 11.65	11.65	11.65
Span	30.33	30.33	/ 30.33	30.33	30.33
Spotting Factor (A-7 1.0)	.95	.95	/ .95	TBD	.95
Maximum Vertical Gross Take-off (VTO) Weight (lbs)	19,185	19185	/ 19185	19,185	19,185
Maximum Short Gross Take-off (STO) Weight (lbs) (1,000 ft roll)	28,350	28350	/ 28350	30,060	30,060
Close Air Support Radius of Action (NM)					
VTO	50	50	/ 50	TBD	50
STO	209	155	/ 155	155	155
Mean Flight Hours Between Failures (MFHBF), (hrs)	2.40	2.04	/ 2.04	2.04	2.04
Maintainability (DMMH/FH), (hrs)	16.9	16.5	/ 16.5	14.5	14.5
Standard Depot Level Maintenance Cycle (Airframe hours)					
1st Period	1,000	1000	/ 1000	TBD	1,000
2nd Period	800	800	/ 800	TBD	800
3rd Period	600	600	/ 600	TBD	600
VTO Close Air Support Payload (lbs)	2,850	2850	/ 2850	TBD	2,850
STO Close Air Support Payload (lbs) (600ft, 20 kts WOD, 87 deg. F, Tropical Day)	7,980	7980	/ 7980	TBD	7,980

(b)(1)

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations —

Current estimate reflects known weight growth to accommodate LERX, 25mm gun provisions, and deficiencies corrections. Close air support radius of action short take off, current estimate and demonstrated performance changes to reflect specific mission profile from MS IIIA DNSARC and 5 August 1984 DCP. Maximum short gross takeoff changed to reflect demonstrated performance with -406A engine. Maintainability (DMMH/FH) and weapon accuracies changed to reflect demonstrated performance.

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:
DCP approved 16 January 1987.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1988.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	872.7	1116.1	1155.3
Procurement	4862.4	3673.1	3813.0
Airframe	(2650.5)		(2140.4)
Engine	(899.0)		(419.6)
Avionics	(258.9)		(173.5)
Other GFE	(145.5)		(116.3)
Total Flyaway	(3953.9)		(2849.8)
Other Weapon Systems	(439.3)		(615.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(469.2)		(347.4)
Construction (MILCON)	5.5	5.5	5.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 79 Base-Year $	5740.6	4794.7	4973.8
Escalation	3384.9	3527.8	3744.6
Development (RDT&E)	(185.3)	(323.7)	(365.3)
Procurement	(3196.8)	(3201.3)	(3376.5)
Construction (MILCON)	(2.8)	(2.8)	(2.8)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	9125.5	8322.5	8718.4

11a. (U) Total Program Cost and Quantity (Cont'd):

AV-8B HARRIER II

b. (U) Quantity —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	6	0	6
Procurement	336	276	279
Total	342	276	285

c. (U) Foreign Military Sales/International Cooperative Programs — The General and Full Integration MOU was signed by Italy, Spain and the United States on 28 September 1990 for a Cooperative Development Program.

Workshare meetings were held at McAir in St. Louis 20-21 February 1991, in Washington 16-17 April 1991 and again in St. Louis 1-3 July 1991. An Industry Participation Plan (IPP) was developed from these meetings which was discussed at the Steering Committee Meeting in Madrid, Spain 16-18 July 1991. IPP meetings were held at McAir in St. Louis 12-13 September 1991 and again in St. Louis 23-24 October 1991. The IPP was presented to the Steering Committee in Rome on 13-14 November 1991.

A Cooperative Program with the Government of Spain and the Government of Italy has been approved for full integration of a radar in the AV-8B weapon system. It is anticipated that production deliveries of radar equipped AV-8B aircraft will commence the second quarter of 1993.

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Development Estimate:
DCP approved 16 January 1987.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1988.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	8718.4	8599.4	8718.4
(2) Quantity	285	285	285
(3) Unit Cost	30.591	30.173	30.591
b. (U) Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	24.8	24.8	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	24.8	24.8	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1058.0	8059.2	8.3	9125.5
Previous Changes:				
Economic	+9.6	-753.6	-	-744.0
Quantity	-	-1389.9	-	-1389.9
Schedule	+17.7	+1399.3	-	+1417.0
Engineering	+181.1	+748.1	-	+929.2
Estimating	+198.0	-1194.7	-	-996.7
Other	-	-	-	-
Support	-	+258.3	-	+258.3
Subtotal	+406.4	-932.5	-	-526.1
Current Changes:				
Economic	-3.0	-6.6	-	-9.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+59.2	-26.9	-	+32.3
Other	-	-	-	-
Support	-	+96.3	-	+96.3
Subtotal	+56.2	+62.8	-	+119.0
Total Changes	+462.6	-869.7	-	-407.1
Current Estimate	1520.6	7189.5	8.3	8718.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	872.7	4862.4	5.5	5740.6
Previous Changes:				
Quantity	-	-544.2	-	-544.2
Schedule	+10.8	+723.2	-	+734.0
Engineering	+115.7	+326.6	-	+442.3
Estimating	+128.4	-1597.2	-	-1468.8
Other	-	-	-	-
Support	-	+13.1	-	+13.1
Subtotal	+254.9	-1078.5	-	-823.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+27.7	-11.9	-	+15.8
Other	-	-	-	-
Support	-	+41.0	-	+41.0
Subtotal	+27.7	+29.1	-	+56.8
Total Changes	+282.6	-1049.4	-	-766.8
Current Estimate	1155.3	3813.0	5.5	4973.8

b. (U) Previous Change Explanations —

RDT&E

Economic: Revised escalation rates. Previous change inadvertently reported in economic instead of estimating. Correction made on this report.

Schedule: Extend flight test program two years for follow on flight test program.

Engineering: Addition of design/fabrication/integration/test of 25mm gun, development of the TAV-8B. Increase for night attack capability with United Kingdom FLIR system.

Estimating: Decreased currency conversion rate for engine procurement, decrease offset for new economic indices and refinement of estimate, base year

13b. (U) Cost Variance Analysis (Cont'd):

adjustment and prior year reprogrammings, prior year increase due to foreign exchange adjustment, increase for TAV-8B, FY92 effort partially offset by reduced requirements in prior fiscal years, increase in non-recurring costs due to -408 engine upgrade and engine non-recurring recoupement. Anticipated savings in TAV-8B and night attack and correction of error in computation of inflation indices. Reporting 1992-1994 controls as shown in current controls. Increase due to correction in estimating that was inadvertently shown in economic.

Procurement

Economic: Correction of application of procurement outlay factors, revised escalation rates, and correction of previous error. Revised escalation rates.

Quantity: Decrease of 52 aircraft. Increase aircraft procurement by six (Desert Storm).

Schedule: Revised procurement schedule for 336 aircraft accelerated procurement schedule, and four additional years added to program. Revised procurement schedule.

Engineering: Decrease of 52 aircraft. Increase due to schedule change, night attack capability, ASPJ and ECPs which provide recurring systems for aircraft procured in FY88 and subsequent years. Radar upgrade integration.

Estimating: Decreased currency conversion rate for engine procurement, offset for new economic decrease, correction of procurement outlay factor, and refinement of estimates, decreased dollar pound exchange rate, quantity adjustment, base year adjustment, reduction of 52 aircraft, and FY82/83 reprogramming. Prior year contracts negotiated lower than anticipated. Decrease due to overhead and labor rate decrease at MCAIR. Revised estimate reduction based on contract negotiation. Revised to reflect actual costs in prior years.

Support: Reduced spares due to reduced aircraft buy. Increases in GSE, pubs, ILS/ME and spares to accommodate night attack, ASPJ and other configuration ECPs. Decrease in pubs, spares, GSE, training due to refined pricing based on contract negotiated lower than anticipated. Adjustment due to error in prior SARS in estimated variance category. Prior year readjustments plus elimination of three years of support and spares due to the

13b. (U) Cost Variance Analysis (Cont'd):

quantity change. Adjustment to procure required baseline FY88 night attack avionics F406-408 engine and increased survivability improvement including stand up of Yuma. Increase in spares to support six Desert Storm aircraft.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Reporting 1994-1999 controls as shown in current RDDS. (Estimating)	+27.6	+59.0
Revised escalation rates. (Economic)		-3.0
Adjustment for current and prior year inflation. (Estimating)	+0.1	+0.2
RDT&E Subtotal	+27.7	+56.2
(2) Procurement		
Increase due to production line shutdown. (Support)	+41.0	+96.3
Revised esclation rates. (Economic)	--	-6.6
Revised to reflect actual costs in prior years. (Estimating)	-12.5	-28.2
Adjustment for current and prior year inflation. (Support) (Estimating)	+0.6	+1.3
Procurement Subtotal	+29.1	+62.8

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
26.683	-2.644	0.460	4.972	3.260	-3.384	--	1.244	3.908	30.591

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement —

(U) FY89/90/91 Airframe:
McDonnell Douglas Corp., St. Louis, MO
N00019-88-C-0001, FFP
Award: March 14, 1988
Definitized: September 27, 1989

Initial Contract Price		
Target	Ceiling	Qty
$782.3	N/A	72

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$878.1	N/A	72	$878.1	$878.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

The target contract price for N0001988C0001 was established at $782.3M. Subsequent modifications to the contract for radar have increased the price to $878.1M.

Three aircraft on this contract will be sold to Italy under FMS Case IT-B-SBJ. The aircraft quantity and funding are still included in the above totals until a contract modification formally modifies the contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status —

(1) Percent Program Completed: 75.0% (18 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 99.3% ($8658.9 / $8718.4)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1461.1	18.3	19.2	22.0	1520.6
Procurement	7189.5	-	-	-	7189.5
MILCON	8.3	-	-	-	8.3
O&M	-	-	-	-	-
Total	8658.9	18.3	19.2	22.0	8718.4

c. (U) Annual Summary —

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1976				5.2	4.3	4.3	1.6	6.6
197T				2.2	1.9	1.9	1.9	2.9
1977				37.6	33.6	33.6	33.6	2.6
1978				61.2	58.9	58.9	58.9	6.8
1979				158.8	168.7	168.7	168.7	8.4
1980				155.3	182.4	182.4	182.4	10.6
1981				186.2	238.6	238.6	236.2	10.6
1982				167.0	225.2	225.2	224.3	7.6
1983				82.3	116.0	114.7	110.6	4.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1984				69.2	101.1	100.8	94.9	3.8
1985				40.8	61.4	61.4	60.7	3.4
1986				43.3	67.1	67.1	66.3	2.8
1987				26.1	41.7	41.7	40.6	2.7
1988				24.6	40.5	40.5	39.6	3.0
1989				21.5	36.9	36.9	35.6	4.2
1990				16.6	29.6	29.6	28.2	4.0
1991				17.5	32.4	30.1	2.4	4.3
1992				4.8	9.1	8.9	0.8	2.8
1993				6.0	11.7			2.4
1994				9.2	18.3			2.4
1995				9.4	19.2			2.3
1996				5.7	11.8			2.3
1997				3.1	6.5			2.2
1998				1.0	2.1			2.2
1999				0.7	1.6			2.2
Subtot	6			1155.3	1520.6	1445.3	1387.3	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1506 Aircraft Procurement, Navy								
1981		59.1		59.1	86.6	86.6	84.9	11.6
1982	12		306.4	412.2	656.4	656.4	621.0	14.3
1983	21		303.6	480.6	814.3	814.3	793.4	9.0
1984	27		295.9	446.7	787.2	787.2	744.3	8.0
1985	32	5.6	283.9	374.8	679.7	679.7	666.5	3.4
1986	46	0.4	370.9	469.7	877.6	877.6	877.6	2.8
1987	42	17.8	290.3	361.8	699.8	698.8	698.8	2.7
1988	24	21.2	230.7	300.7	606.9	606.2	606.2	3.0
1989	24	12.6	193.1	280.8	589.4	588.9	524.7	4.2
1990	24	10.1	169.0	252.0	547.2	475.5	416.1	4.0
1991	21	14.6	180.6	241.4	539.2	494.3	83.7	3.9
1992	6	1.1	82.9	122.6	280.4	173.0	13.4	4.3
1993				10.6	24.8			2.4
Subtot	279	142.5	2707.3	3813.0	7189.5	6938.5	6130.6	
Appropriation: 1205 Military Construction, Navy								
1983				3.2	4.6	4.6	4.6	4.9
1986				2.3	3.7	3.7	3.7	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1205 Military Construction, Navy (Cont'd)								
Subtot				5.5	8.3	8.3	8.3	
Grand Total	285	142.5	2707.3	4973.8	8718.4	8392.1	7526.2	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady-state rate of production during Milestone III was 32 aircraft per year.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

There are no new production buys after FY92.

17c. (U) Production Rate Data (Cont'd):

c. (U) Deliveries (Plan/Actual) —

	To Date
RDT&E	6/6
Procurement	229/234

d. (U) Approved Design-to-Cost Objective — N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules —

A-4M O&S Costs in FY91 Dollars

Aircraft per squadron	12
Flight hours/aircraft/month	21.7
Date of estimate/revision	3 Feb 92 (new)*

AV-8A O&S Costs in FY91 Dollars

Aircraft per squadron	9
Flight hours/aircraft/month	24.0
Date of estimate/revision	3 Feb 92*

*Estimates based on data from Visability and Management of Operating and Support Costs - AIR Total Support System.

AV-8B O&S Costs

Flight hours per aircraft per month	29
Number of aircraft/squadron	20
(14 aircraft per squadron with a six aircraft detachment)	
Consumption rate gal/hr	722.7
POL cost, JP-5, per barrel, FY90	25.2

There is no antecedent system.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs — (FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per squadron/year	Avg Annual Cost Per squadron/year
Personnel	9.1	N/A
Consumables	7.9	N/A
Depot Maintenance	6.2	N/A
Sustaining Investment	3.2	N/A
Indirect Cost	0.4	N/A
Total	26.8	N/A

c. (U) Contractor Support Costs — (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	28.0	4.6	4.6	---	37.2
Industrial Fund	10.1	2.1	2.2	---	14.4
Total	38.1	6.7	6.8	---	51.6

AF-5 B-18

92-082

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: B-1B

AS OF DATE: December 31, 1992

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~~CLEARED FOR OPEN PUBLICATION MAY 24 1993~~

1. (U) Designation and Nomenclature (Preferred Name):
B-1B

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
ASC/YD
B-1B System Program Office
Wright-Patterson AFB
DAYTON, OH 45433-6503

Col Henry E. Laakman Jr.
Assigned: June 1, 1992
AV 785-3281 COMM (513) 255-3281

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604226F
PROCUREMENT:
APPN 3010 ICN 0101B001B0 (Air Force)
APPN 3010 ICN 0501B1BM00 (Air Force)

SAF/PAS
93-344 -T

~~Classified by: B-1B SCG dated 30 Jun 91~~
~~Declassify on: Originating Agency's Determination Required (OADR)~~
~~Downgrade Instructions: OADR~~

~~SECRET~~

~~SECRET~~

5. (U) Related Programs:
B-1B Simulator, *Common Strategic Rotary Launcher (CSRL), Short Range Attack Missile (SRAM), Conventional Weapons Release Systems (CWRS), Air Launched Cruise Missile (ALCM), Miniature Receive Terminal (MRT), MILSTAR, and Global Positioning System (GPS) and Advanced Expendables.

*NOTE: Although the Common Strategic Rotary Launcher (CSRL) is still an active program, it is no longer considered to be a part of the B-1B program since it has been removed under the terms of the Strategic Arms Reduction Treaty (START).

6. (U) Mission and Description:
The major purpose of the B-1B has been to modernize the airbreathing leg of the Strategic Triad. Today, the B-1B's role is planned to change. The Air Force Bomber Roadmap highlights that the B-1B will become the backbone of the Air Force's conventional bomber force as this weapon system has some very unique capabilities to provide both mass and reach to the theater commander in blunting an attack. In addition, the B-1B can perform other missions as needed. The long range and large payload of the B-1B makes it an ideal aircraft to support the United States global power and global reach objectives across the full spectrum of potential conflicts.

The B-1B uses the B-1A aerodynamic shape and structure, as well as many of the B-1A systems. The B-1B has heavyweight landing gear and is powered by four F101-GE-102 afterburning turbofan engines which are a direct derivative of the F101-GE-100 engines used on the original B-1A. The avionics systems are updated to accommodate revised B-1B missions, counter new threats, and employ currently available equipment and technology. The communications and traffic control group remains essentially the same as B-1A, except current inventory replacements and AFSATCOM are used. The offensive systems group maximizes the use of B-52 Offensive Avionics System equipment as well as adding a new forward Looking Radar/Terrain Following Sensor and a new inertial system. The Defensive Systems Group incorporates the ALQ-161 as well as adding four frequency bands, some new jamming technologies, and a Tail Warning Function. The B-1B weapon system is able to deliver conventional as well as nuclear ordinance. The B-1B aircraft will modernize the bomber force and will continue to do so as it partially replaces the older venerable B-52G's in their previous conventional role.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The baseline configuration for the B-1B aircraft was established 4 November 1981 by the Deputy Secretary of Defense (DepSecDef). Production and FSD contracts were awarded to Rockwell, General Electric, AIL, and Boeing in early 1982. The rollout of the first

7a. (U) Program Highlights (Cont'd):

B-1B occurred on 4 Sept 1984. First flight occurred 18 October 1984. The first B-1B production aircraft going to Strategic Air Command (SAC), B-1B A/C #2, arrived at SAC HQ on 27 June 1985. The Initial Operational Capability (IOC) milestone was met in September 1986. Aircraft #100 was delivered on 30 April 1988. Program Management Responsibility Transfer (PMRT) to OC-ALC for the B-1B weapon system occurred on 1 January 1989. The B-1B established 36 world records for speed, distance and payload.

Automatic terrain following runs were completed at the minimum set clearance of 200 feet hardride on 22 Sep 88. The Stall Inhibitor System 2/Stability Enhancement Function (SIS2/SEF) flight testing was completed on 31 May 89. In Sep 89, aircraft #9 completed its modification for SRAM II carriage and flight test began.

The Conventional Weapons Release System (CWRS) received Safety Certification on 25 May 89. On 21 Jul 89, the B-1B was certified for conventional weapons delivery. Air Launched Cruise Missile (ALCM) activity (internal carriage only) for the B-1B was completed on 30 Sep 89 when the ALCM Nuclear Weapons Systems Safety Group (NWSSG) safety rules were approved.

On 31 Jul 89, the Air Force issued a contract modification which implemented the CORE ALQ-161A recovery program. Successful flight test of defensive system software version Production Flight Software (PFS) 5.0 occurred Feb 91.

Risk reduction studies for the integration of an "off-the-shelf" Radar Warning Receiver (RWR) were started third quarter FY89, and later stopped because the FY90 Defense Appropriations Act directed that no additional funds were allowed to be obligated in FY90 toward RWR activities.

The FY90 Defense Appropriations Act did not provide baseline logistics support funds. Through reprogramming action, funds were eventually provided on 23 Sep 90. This caused a year's delay in the updating of 349 technical orders and the development of 204 Test Program Sets.

In Jan 90, Congress directed the Air Force to "fence" $50M for cruise missile testing. The loss of this funding resulted in the delay of SEF activation, Electrical Multiples Equipment (EMUX) sparkle development, and the then planned Anti-Ice development effort.

Until 20 Dec 90, the AIL Core development program was on track to a Feb 91 Functional Configuration Audit (FCA). Then the program was placed on hold because of an engine problem that has grounded the

7a. (U) Program Highlights (Cont'd):

B-1B fleet. Laboratory System Qualification Testing (SQT) was completed in Nov 90 and results indicate the Core system will meet Air Force specifications with a few exceptions. The Core FCA was successfully completed in Apr 91; however, the Core production program was terminated Mar 91 due to a lack of funds within the Air Force and a reprogramming request was not approved by Congress.

In the FY91 Defense Appropriations Act, Congress deleted funding for the RWR program and directed a side-by-side simulation of the ALR-56M and 62I but provided no funds to support such comparison. In addition, FY91 funding for the RWR program was eliminated.

The FY92 budget deleted funds planned to procure ECM depot baseline logistics support for the currently fielded defensive sytem. In addition, Congress withheld obligation authority for appropriated funding until Jan 93. As a result, the SAE Acquisition Program Baseline (APB) dates for Rockwell and AIL transition to organic depot maintenance will not be met.

The "M" account restrictions on FY91 budget had significant impact on the program. In addition to funds not being available to start Core production, the Air Force's ability to fund must pay bills will be impaired and funding assistance will be required in future years for items such as overtarget payments on existing production contracts, termination costs and tools disposition costs.

Ninety-four (94) of ninety-six (96) aircraft received the SIS2/SEF flight control modification. The remaining two aircraft are scheduled for completion in 1992. SEF activation started in Mar 91 which provides full operational envelope of use to the B-1B. Thirty-six (36) aircraft had completed the activation effort as of Dec 91 and the entire fleet should be completed by Dec 92.

The Tail Warning Function (TWF) completed successful flight tests in Mar 91 and kitproof was completed in Oct 91.

The Overwing Fairing (OWF) Fire Protection modification continued its retrofit through 1991 after a successful kitproof in Jun 91. The Fire Prevention production lot contract was awarded in Sep 91.

Structural cracks were identified on the B-1B 25 degree longeron. A retrofit program was initiated after testing and analysis of the problem. Twenty (20) kits were procured and continued assessments were planned for 1992 to determine the final solution for the fleet.

The System Program Office (SPO) implemented Integrated Weapon System Management (IWSM) in Sep 91 with the Systems Program Director at the

7a. (U) Program Highlights (Cont'd):

Oklahoma City Air Logistics Center and the SPO maintained a development support directorate at Wright-Patterson AFB OH.

As a result of the presidential termination of the SRAM-II program, all flight test activities ceased at Edwards AFB on 31 Dec 91. Aircraft 9 and 28 were placed in flyable storage and aircraft 28 started conversion to an Air Force organic maintenance capability. The termination of SRAM-II integration caused the loss of funding for MIL STD 1760 interface needed for future smart weapons and ancillary flight testing could no longer be conducted using dedicated flight test aircraft at Edwards AFB CA. This impacted the SPO's ability to efficiently work aircraft problems such as the longeron, aft weapons bay modification and fuel center of gravity modification checkout which were planned to be done concurrently with SRAM-II testing.

On 5 Feb 91, the B1-B fleet returned to flying status. A strengthened fan blade retainer ring was installed preventing catastrophic engine failures.

b. (U) Significant Developments Since Last Report --
The 25 degree longeron prototype repair packages were procured and installed on fleet aircraft Jul - Dec 92. The fix has been finalized by increasing the aluminum doubler thickness and determining the right bonding procedures. Data collection will continue to ensure that this repair sufficiently reduces the load on the longeron. The projected fleetwide completion date is Dec 94.

The fleet completed the Stability Enhancement Function (SEF) activation modification in Sep 92.

The B-1B Bomber set another milestone in aircraft performance 28-29 Feb 92 by breaking eight world time-to-climb records and setting three others. One B-1B, and three bomber crews added the time-to-climb records to more than 30 speed and distance records the B-1 already holds.

Aircraft #680095 from Dyess AFB suffered an inflight engine failure on 19 Jun 92. Flying was temporarily suspended on 26 Jun 92 and resumed again on 15 Jul 92. Lancer 101, a program to correct F-101 engine problems was instituted. A formal mishap board was convened 21 Jun 92 and as a result, five urgent action Time Compliance Technical Orders (TCTO) are being performed. Four modification efforts are also required to correct safety, reliability and maintainability problems associated with the engines.

On 18 Sep 92 B-1B aircraft tail number AF85-0068 completed a successful 4.5 hour functional check flight on the first attempt,

7b. (U) Program Highlights (Cont'd):

after a one year break in service. Military personnel were attached to the B-1B Combined Test Force (CTF) to accomplish the maintenance requirements and contractor personnel provided technical support in rebuilding the aircraft. The aircraft can now be maintained by Air Force personnel and no longer requires contractor support for basic maintenance. Updating aircraft #28 was accomplished at a cost savings of approximately $21.7M from the original contractor estimate.

Nose Landing Gear uplock bellcrank cracks were detected on 88 B-1B aircraft. The source of the problem was a deficient design of the bellcrank for the actual loads seen in service on the aircraft. Weld repairs have been made to 23 bellcranks. Replacement bellcranks are being fabricated. No aircraft were placed in a non-flyable status due to the problem. Fleet changeout is estimated to be completed in Jun 93 at a cost of less than $1M.

Two major safety modifications, Overwing Fire (OWF) Protection and OWF Prevention, are being successfully accomplished on the B-1B. These modifications are among the most complex to be implemented on the B-1B, and are being installed at one of the most accelerated rates ever attempted on this weapon system. Even at that, these will be the first B-1B modifications to be fielded with all logistics support available when the first modified aircraft is delivered to the user. Fifty-seven (57) of ninety-five (95) aircraft have completed the modification.

The B-1B is implementing a series of F-101 engine modifications designed to increase safety factors, prevent engine caused mishaps, improve operational concerns and reduce unscheduled maintenance. Incorporation of these modifications will improve the "Engine Non-mission Capable" rate, improve engine "Hot Section" life, and save on future spares procurement.

The lack of available "M" account 3010 funds continues to have a significant negative impact on the B-1B program. Production contracts nearing completion/closeout result in must pay overtarget bills and contractor claims against "M" year funds which must be paid from current year funding. The only source of B-1B current year funds to pay these 3010 appropriation prior year bills is to use funds provided for procurement of Deferred Logistics. The use of these funds is planned as a last resort; however, contractual timing requirements dictates covering these liabilities as soon as possible and therefore, leaves the Air Force and the B-1 SPO without any other alternative. Use of these funds is being held to the absolute minimum as the Air Force is committed to making the B-1B organic repair capable as quickly as possible to reduce the B-1B's dependence

7b. (U) Program Highlights (Cont'd):

on costly Interim Contractor Support (ICS).

On 30 Nov 92, aircraft #86-0106 was on a routine night-time Terrain Following flight when it crashed into a vertical cliff, approximately 350-400 feet below its top. The collision resulted in the total destruction of the aircraft and the loss of life of all four crew members. The accident report revealed that the aircraft systems operated properly and were not a contributing cause to the unfortunate loss of a valuable weapon system and the lives of four (4) aircrew members

Due to the initiation of two major conventional upgrade modification programs requiring significant development/integration on the B-1B, the decision was made to transfer the B-1B System Program Director to the product center, ASC/YD Wright-Patterson AFB OH. Integrated Weapon System Management (IWSM) continues to progress. The office at OC-ALC has assumed the title of System Support Manager. Manpower and functional alignments are being developed at the functional level. Version two (2) of the consolidated Program Baseline (APB) has been completed but not signed. Activities are underway to plan, program and budget Conventional and Electronic Countermeasures updates in keeping with the Air Force Bomber Roadmap.

The first two (2) 1122 Antenna Modification Kits were placed on contract 30 Jun 92. The modification replaces the existing antenna and provides an improved threat handling capability by the extension of frequency coverage, an increase in power handling capability and the addition of a third set of antennas. The 1122 Antenna provides dual simultaneous coverage not previously available on the B-1B. Trial installation of the 1122 Antenna Modification is scheduled for 1 Jul - 30 Sep 93 with kitproofing to begin in Jan 94.

In accordance with the law governing SAR reporting, this will be the final time B-1B production efforts will be reported. The next SAR submitted will be based on the approved APB and appropriate reporting parameters for performance, cost and schedule for the B-1B Conventional Upgrade Program.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --
The FY 92 authorization bill provided no funding for a CORE restart or RWR, but directed a side-by-side RWR comparison of the ALR-56M and the ALR-62I. No funding was provided for the side-by-side RWR comparison. In addition, Section 132 of Public Law 102-190 directed that the DOD conduct a Life Cycle Cost (LCC) comparison of the current AN/ALQ-161A, the developed CORE modification, and a ALQ-172

7c. (U) Program Highlights (Cont'd):

like system. The reports were submitted to Congress by OSD in Sep 92 and funds to procure deferred logistics were released to the Air Force in Jan 93.

On 16 Apr 93, the Undersecretary of Defense for Acquisition (USD(A)) approved the B-1B APB that finalized the B-1B strategic program. On that same date, USD(A) formally acknowledged the need for a separate B-1B conventional mission upgrade APB.

The B-1B program conducted a Strategic Systems Committee review for the planned conventional upgrade program on 18 Feb 93. The Air Force received formal approval of the conventional upgrade program as an ACAT ID program on 30 Apr 93. USD(A) also approved, on 30 Apr 93, the release of the RFP to initiate activities for the conventional program and guidance to conduct a COEA. The B-1 SPO released the RFP on 3 May 93.

8. (U) Threshold Breaches:
There are currently no breaches to the Approved Program Baseline (APB dated 16 Apr 93). There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
R & D Contract Award	JAN 82	JAN 82	JAN 82
Production Contract Award	JAN 82	JAN 82	JAN 82
Engineering Review	APR 82	APR 82	APR 82
Configuration Review	JAN 83	JAN 83	JAN 83
OSD Program Review	SEP 82	FEB 83	FEB 83
DT&E/IOT&E			
Start	APR 83	MAR 83	MAR 83
Complete	JUN 86	FEB 91	FEB 91
First Flight B-1/Aircraft #2	APR 83	MAR 83	MAR 83
First B-1B Flight	MAR 85	OCT 84	OCT 84
FOT&E Phase I			
Start	OCT 85	JUL 85	JUL 85
Complete	OCT 87	MAR 89	JUN 89
IOC (15th Aircraft Delivery)	SEP 86	SEP 86	SEP 86
Production Complete (100 A/C Delivered)	JUN 88	JUN 88	APR 88
Program Management Responsibility Transfer (PMRT)	N/A	JAN 89	JAN 89
Core DT&E/IOT&E(RFSMS/ECM) Complete	N/A	FEB 91	N/A

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
ECM Core Development Complete	N/A	FEB 91	N/A

b. (U) Previous Change Explanations --

The Core production program (ECP-080) was terminated on 8 Mar 91 due to lack of funds. Therefore, the ECM Retrofit Complete milestone cannot be met.

The poor performance of the defensive system contractor and the identification of numerous system deficiencies during flight testing resulted in the inability to achieve the ECM development completion (Sep 89) and ECM retrofit completion (Mar 92) dates. When Congress eliminated the use of the merged account, the Air Force could no longer fund the Core ECM production program beyond Feb 91. This funding problem only impacted the Core retrofit schedule and the ECM development was completed in Apr 91 with a successful Functional Configuration Audit (FCA) which verified system performance and met the development specification requirements. Without funding from the "M" account, the Air Force could not continue to incrementally fund the Core program. In Mar 91 the Air Force terminated the Core production funding contract. The Air Force attempted to obtain funds for Core via the FY91 omnibus reprogramming request; however, the request was denied. New schedule dates could only be established if funding and direction was provided. The Air Force has received no funds to complete the ECM retrofit. Therefore, the Air Force has notified OSD in the baseline change request and program deviation report that this schedule is not obtainable and the baseline breaches are non-recoverable.

The Air Force has developed a plan to provide an upgrade defensive avionics system based on the results of the Air Force Bomber Roadmap and 28 Sep 92 B-1 Summit and Air Force validated operational requirements.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DCP dated 30 September 1983 and USD(A) approved APB change of 16 Apr 93

9d. (U) Schedule (Cont'd):

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 16 April 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Speed (Mach):				
Best Cruise at altitude	.72	.73 / .70	.72	.72
Penetration	.85	.87 / .83	.85	.85
Altitude envelope (ft) 1/	0-25000	0-25000 / 0-20000	0-35000	0-35000 (CH-1)
Weapon Carriage				
AGM-69A (Internal)	24	24 / 24	16	24
AGM-86B				
Internal	8	8 / 8	8	8
External	14	12 / 12	N/A	12
B61/B83 (Internal)	24	24 / 24	24	24
MK-82 AIR/36DST (AIR)(Internal)	84	84 / 84	84	84
Takeoff Distance (ft)				
470,000 pound A/C	9300	9300 / 9500	N/A	9300
440,000 pound A/C	6000	7600 / 7800	N/A	7700
Range (NM at 433,000 lbs takeoff; 24 SRAM, full internal fuel, one aerial refuel)	6000	6400 / 5600	5880	5874
Weight empty (lbs)	186000	186000 / 187400	187400	187400

(b)(1)

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Mean Time Between Unscheduled Maintenance Actions (flight hours)	1.0	1.0 / 0.22	1.21	1.21

(U) Notes:

Groundrules for range computation: (1) Assumes 24 SRAM - 53040 lbs; (2) Operating Weight - 191956 lbs; (3) Take Off Gross Wt - 432850 lbs; (4) Single Enroute Refueling - 100000 lbs.

Threshold at IOC

External ACM testing was deferred in PMD R-Q 1010(7)/0604226F/11126F, dated 15 Jun 89.

Mean Time Between Unshed Maintenance Actions based on inherent maintenance actions and 03, 04 special inspections.

Availability = Demonstrated performance based upon aircraft matured at 200,000 flying hours and organic repair capability.

b. (U) Previous Change Explanations --

Following USDR&E direction, the Air Force decided in Feb 86 to limit AGM-86B weapon carriages to ensure compliance with existing arms control policies. The flight test results have shown slightly higher drag which will decrease the mission range. Previous values were estimates based on wind tunnel drag data. Flight test results have also affected our estimates of Base Escape Data. Changes have occurred due to maturing of both B-1B systems and LRU components. APB updates dated December 1988. Range changed due to revision in aerodynamic model. The change in weight empty (pounds) reflects a higher confidence in actual weights of delivered aircraft as more aircraft have actually been weighed. As the B-1B weapon system continues to accumulate flying hours toward it's maturity, the reliability and maintenance factors continue to fluctuate. Changes in Base Escape (Minutes) are reflective of latest flight test results.

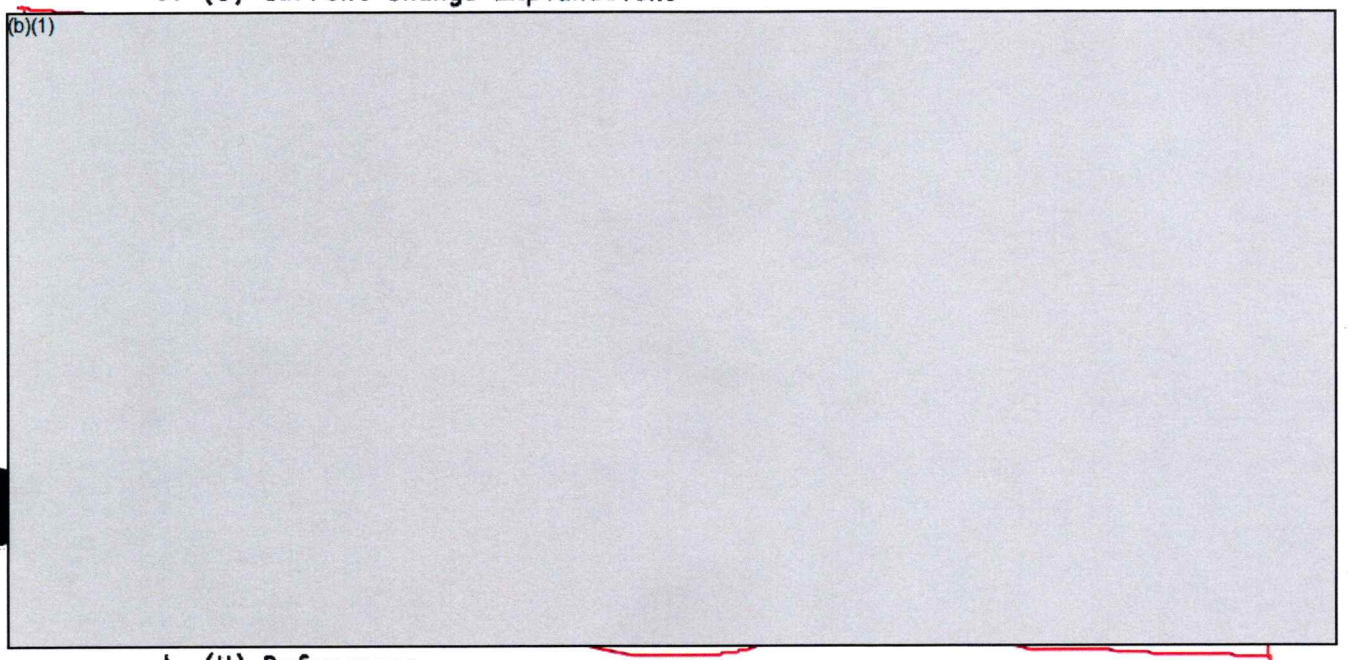
Constantly changing Maintainablity (Mean Maintenance Hours/Flight Hours and Mean Time Between Unshed Maintenance Actions (flight hours)) are a result of the B-1B weapon system continuing to

10b. (U) **Performance Characteristics (Cont'd):**
accumulate flying hours towards its maturity.

All performance characteristics changes are due to actual demonstrated B-1B capability

c. (U) Current Change Explanations --

(b)(1)



d. (U) References --

(U) Development Estimate:
DCP dated 30 September 1983

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 16 April 1993.

11. (U) **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	2538.9	3051.8	3337.4
Procurement	17961.1	17251.4	17617.1
Flyaway	(15128.9)		(14899.2)
Peculiar Support	(1768.0)		(1901.3)
Initial Spares	(1064.2)		(816.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 81 Base-Year $	20500.0	20303.2	20954.5

11a. (U) **Total Program Cost and Quantity (Cont'd):**

	Development Estimate	Approved Program	Current Estimate
Escalation	9037.6	7134.5	7683.1
Development (RDT&E)	(583.2)	(698.7)	(968.0)
Procurement	(8454.4)	(6435.8)	(6715.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	29537.6	27437.7	28637.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	100	100	100
Total	100	100	100

c. (U) Foreign Military Sales/International Cooperative Programs -- NONE

d. (U) Nuclear Costs -- NONE

e. (U) References --

(U) Development Estimate:
DCP dated 30 September 1983

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 16 April 1993.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	28637.6	27670.5	28637.6
(2) Quantity	100	100	100
(3) Unit Cost	286.38	276.71	286.38

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	165.8	165.8	162.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	165.8	165.8	162.5
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

13. (U) **Cost Variance Analysis**:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3122.1	26415.5	0.0	29537.6
Previous Changes:				
Economic	-110.6	-1625.6	-	-1736.2
Quantity	-	-	-	-
Schedule	-6.0	-349.1	-	-355.1
Engineering	+264.7	+273.6	-	+538.3
Estimating	+472.3	-706.9	-	-234.6
Other	-	-	-	-
Support	-	-79.5	-	-79.5
Subtotal	+620.4	-2487.5	-	-1867.1
Current Changes:				
Economic	-1.7	-11.9	-	-13.6
Quantity	-	-	-	-
Schedule	-205.5	-	-	-205.5
Engineering	+765.7	-	-	+765.7
Estimating	+4.4	+25.4	-	+29.8
Other	-	-	-	-
Support	-	+390.7	-	+390.7
Subtotal	+562.9	+404.2	-	+967.1
Total Changes	+1183.3	-2083.3	-	-900.0
Current Estimate	4305.4	24332.2	-	28637.6

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2538.9	17961.1	0.0	20500.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-8.8	-179.3	-	-188.1
Engineering	+170.8	+154.9	-	+325.7
Estimating	+318.9	-223.7	-	+95.2
Other	-	-	-	-
Support	-	-316.9	-	-316.9
Subtotal	+480.9	-565.0	-	-84.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-121.8	-	-	-121.8
Engineering	+437.4	-	-	+437.4
Estimating	+2.0	+18.4	-	+20.4
Other	-	-	-	-
Support	-	+202.6	-	+202.6
Subtotal	+317.6	+221.0	-	+538.6
Total Changes	+798.5	-344.0	-	+454.5
Current Estimate	3337.4	17617.1	-	20954.5

NOTE: $438M (BY$) is for the Conventional Upgrade program and is not part of the MS-III baseline program that this SAR tracks. The conventional upgrade program will be tracked in the next SAR submitted.

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices

Schedule: Rephased schedule for Radar Warning Receiver (RWR)

Engineering: New Requirement - Addition of Radar Warning Receiver (RWR) to B-1B. 1122 Antenna Redesign (Not a baseline requirement). Addition of ALR-56M/ALR-62I Comparison (Unfunded). Funding increases for conventional weapons systems (not

13b. (U) Cost Variance Analysis (Cont'd):

included in the $20.5B Baseline).
Deletion of ALR (ALR is a maintenance code that translates to: A = Installed on the aircraft L = Electronic Countermeasures R = Radar) studies.

Estimating: Congressional reduction during FY85 and FY86 enactment process; Re-estimate based on impact of revised economic escalation rates on prior years. Transfer of ALCM and CSRL integration from procurement and increases in airframe and avionics for ALCM and CSRL integration. Correction of typographical error in Dec 82 SAR. Realignment of fiscal phasing for other government costs. Gramm-Rudman-Hollings reduction during FY86 budget enactment process and Small Business Innovation Research (SBIR) assessment. Extension of flight test program for flight controls, terrain following and ECM systems. Strategic Mission Data Planning System (SMDPS) and Balanced Technology Insertion reductions. Prior year definitization of authorized effort. Reduced estimate to absorb increases resulting from Jan 90 economic indices. Reduction of flight testing due to reprogramming action. Boeing contract underrun deobligation. EPA adjustment. Reduction of RWR funding based on FY91 Amended President's Budget. RWR funding increase to cover previously unfunded effort. Removal of Congressional constraint on ACM testing. Revised estimate for reprogramming action. Current and prior year escalation offset. Prior year definitization of authorized effort. ECM reprogramming action. Arms Control reduction. Funding for studies - Threat Assessment Group (TAG) and Strategic Arms Reduction Treaty (START).

Procurement

Economic: Revised Jan 91 economic escalation indices

Schedule: FY91 Amended PB rephasing of RWR. Rephased RWR activity IAW FY90 Defense Appropriations Act. Rephase of RWR due to Congressional direction.

Engineering: Addition of RWR production costs

Estimating: Congressional reduction during FY85 and FY86 enactment process; applied to reserves and weapons equipment. Re-estimate based on impact of revised economic escalation rates on prior years. One-time change resulting from a correction to the methodology for computing inflation on programs with advance procurement funding. Transfer of ALCM and CSRL integration from procurement to RDT&E.

13b. (U) Cost Variance Analysis (Cont'd):

Congressionally directed reprogramming to Peacekeeper (FY85 enactment process); applied to reserves. Re-estimate of engine requirements. Gramm-Rudman-Hollings reduction of reserves during FY86 budget enactment process. Undistributed budget cuts taken from engineering change orders. Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of escalation changes in current and prior years. Unobligated contingent liability reductions. Prior year definitization of authorized effort. Annual estimate revisions to realign ECP requirements. Rockwell contract over-target - funded with expired year funds. Boeing contract underrun deobligation. AIL Core effort (ECP-080) funded with expired year funds. Definitization of Undefinitized Contractual Actions (UCAs)/claims. EPA adjustment. RWR funding Increase to cover previously unfunded requirements. Core proposal funded with expired funds. Rockwell contract overrun. Current and prior year escalation offset.

Support: Adjustment to peculiar support equipment based on FY90 APB and FY91 Amended President's Budget. Inclusion of Core initial spares. Re-estimate of initial spares requirement - reduced based on actual obligations. Adjustment to refine the mix of previous support and estimating category change primarily related to the impact of escalation changes in current and prior years. Gramm-Rudman-Hollings reductions resulted in limiting of initial spares and peculiar support equipment. Unobligated contingent liability reductions. Prior year definitization of authorized effort/support equipment requirements. Addition of deferred ECM support equipment - FY90-93. PSE rephase and funding increase. Reduced spares estimate based on actuals. Inclusion of additional Core spares due to obligation of M-account. Current and prior year escalation offset. Reduced estimate to absorb increases resulting from Jan 91 economic escalation indices. Definitization of UCAs/Claims. Reduction for deferred logistics due to Congressional direction. Transfer Interim Contractor Support (ICS) from O&M to Procurement (began FY93 and is not included in the $20.5B baseline)

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-1.7
Decrease in funding due to Congressional rephase of RWR (Schedule)	-121.8	-205.5
Revised estimate due to definitization of contracts (Estimating)	-0.9	-1.2
Addition of funding for Conventinal Upgrade Program (Not included in $20.5B Baseline) (Engineering)	+278.8	+491.0
Revised Estimate for Electronic Counter Measures (Engineering)	+158.6	+274.7
Budget allocation increase for additional weapons studies (Estimating)	+2.5	+3.9
Adjustment for current and prior year escalation (Estimating)	+0.4	+1.7
RDT&E Subtotal	+317.6	+562.9
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-11.9
Revised estimate due to definitization of claims and overtargets (Rockwell, AIL & Boeing) (Estimating)	+18.4	+25.4
Revised estimate due to reprogramming for Technical Support Contract/GFP Maintenance (Support)	+1.8	+3.3
Revised estimate for Interim Contractor Support (Support)	+197.0	+380.6
Adjustment for current and prior year escalation (Support)	+3.8	+6.8
Procurement Subtotal	+221.0	+404.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
295.38	-17.50	--	-5.61	13.04	-2.05	--	3.11	-9.01	286.38

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) ROCKWELL FSD:
Rockwell, Los Angeles, CA
F33657-81-C-0208, FPIF
Award: January 20, 1982
Definitized: January 20, 1982

Initial Contract Price		
Target	Ceiling	Qty
$1317.0	$1554.4	0

Current Contract Price		
Target	Ceiling	Qty
$1922.0	$2230.8	0

Estimated Price At Completion	
Contractor	Program Manager
$1922.0	$1930.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-6.7	$-3.9
Cumulative Variances To Date (11/30/91)	$-6.7	$-3.9
Net Change	$0.0	$0.0

Explanation of Change:

Due to the contract being in excess of 90% complete, cost and schedule variances not required from contractor.

This is the final time this contract will be reported in the SAR. Hardware/Software deliveries exceed 90% and contract expenditures exceed 90%.

(U) BMA FSD:
Boeing Military Aircraft, Seattle, WA
F33657-81-C-0212, FPIF
Award: June 8, 1982
Definitized: June 8, 1982

Initial Contract Price		
Target	Ceiling	Qty
$435.0	$512.5	0

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$763.1	$859.7	0	$740.3	$740.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$7.6	$-0.3
Cumulative Variances To Date (12/31/92)	$8.2	$0.0
Net Change	$0.6	$0.3

Explanation of Change:

The improvement of the cumulative cost variance results from a lower skill mix and fewer basic factory labor hours than planned in the Engineering account.

This is the final time this contract will be reported in the SAR. Hardware/Software deliveries exceed 90% and contract expenditures exceed 90%.

b.(U) Procurement --

(U) DEFENSIVE AVIONICS LOT 3:
EATON CORPORATION, DEERPARK, NY
F33657-81-C-0215, FPIF
Award: May 22, 1982
Definitized: May 22, 1982

Initial Contract Price		
Target	Ceiling	Qty
$143.2	$171.1	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$2626.6	$3021.1	100	$2626.6	$2643.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-98.0	$-7.4
Cumulative Variances To Date (12/31/92)	$-142.4	$-0.3
Net Change	$-44.4	$7.1

Explanation of Change:

The cumulative cost variance increase is attributed to Test Program Sets (TPS) significantly behind schedule due to major sub contractor difficulties, internally unanticipated complexities and deficient GFP. The improvement of the cumulative schedule variance results from transfer of effort to the B-1B project Lancer program which is separatly reported.

This is the final time this contract will be reported in the SAR. Hardware/Software deliveries exceed 90% and contract expenditures

15. (U) Contract Information (Cont'd):
exceed 90%.

(U) OFFENSIVE AVIONICS LOT 2:
BOEING, SEATTLE, WA
F33657-81-C-0213, FPIF
Award: June 11, 1982
Definitized: June 11, 1982

Initial Contract Price		
Target	Ceiling	Qty
$172.0	$183.1	9

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$2130.6	$2367.0	100	$2144.3	$2155.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.6	$-2.7
Cumulative Variances To Date (12/31/92)	$-29.9	$0.0
Net Change	$-28.3	$2.7

Explanation of Change:

The unfavorable cumulative cost variance results from overhead increases in Peculiar Support due to continued redesign of Test Program Sets (TPS) and more personnel, overtime, and development material than expected.

This is the final time this contract will be reported in the SAR. Hardware/Software deliveries exceed 90% and contract expenditures exceed 90%.

(U) ROCKWELL PRODUCTION:
Rockwell, Los Angeles, CA
F33657-81-C-0210, FPIF
Award: January 20, 1982
Definitized: January 20, 1982

Initial Contract Price		
Target	Ceiling	Qty
$886.0	$1051.2	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$14813.7	$17313.0	100	$14834.8	$14878.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-624.5	$-20.9
Cumulative Variances To Date (11/30/91)	$-624.5	$-20.9
Net Change	$0.0	$0.0

Explanation of Change:

Due to the contract being in excess of 90% complete, cost and

15. (U) **Contract Information (Cont'd)**:
schedule variances are not required from the contractor.

This is the final time this contract will be reported in the SAR. Hardware/Software deliveries exceed 90% and contract expenditures exceed 90%.

EXPLANATION: The difference between Program Managers Estimated Price at Completion between the Dec 91 SAR and the Dec 92 SAR is explained as follows: $15156.0 reported in the Dec 91 SAR represents an annual estimate done by the SPO in FY91. Since the contract is now complete, an independent estimate is not required in FY92. The FY92 Program Managers estimate represents the current contract target price plus future requirements.

(U) G.E. ENGINE:	Initial Contract Price		
	Target	Ceiling	Qty
General Electric, Cincinnati, OH F33657-81-C-2047, FFP Award: July 20, 1984 Definitized: July 20, 1984	$1387.6	N/A	368

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1456.5	N/A	368	$1456.5	$1456.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the final time this contract will be reported in the SAR. Hardware/software deliveries exceed 90% and contract expenditures exceed 90%.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 68.4% (13 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 95.6% ($27374.7 / $28637.6)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	3557.9	93.5	104.6	549.4	4305.4
Procurement	23816.8	162.5	110.9	242.0	24332.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	27374.7	256.0	215.5	791.4	28637.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1981				208.1	217.3	217.3	217.3	11.9
1982				419.1	467.7	467.7	467.7	9.2
1983				636.8	743.8	743.8	743.8	4.9
1984				596.2	723.2	723.2	723.2	3.8
1985				347.1	435.3	435.3	434.2	3.4
1986				186.1	238.9	238.9	238.7	2.8
1987				88.1	118.3	118.3	118.1	2.7
1988				256.7	355.8	355.8	351.8	3.1
1989				117.7	168.6	168.6	150.6	4.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1990				2.1	3.1	3.1	2.8	4.0
1991								4.3
1992				3.4	5.3	4.7	2.3	2.8
1993				49.8	80.6	4.7	0.3	2.4
1994				56.5	93.5			2.4
1995				61.7	104.6			2.3
1996				98.6	170.8			2.3
1997				76.2	134.8			2.2
1998				61.6	111.4			2.2
1999				71.6	132.4			2.2
Subtot				3337.4	4305.4	3481.4	3450.8	

NOTE: FY93 - FY99 RDT&E funds are for the Conventional Upgrade program and are not part of the APB.

Appropriation: 3010 Aircraft Procurement, Air Force

1982	1	552.1	557.8	1319.1	1619.9	1619.9	1619.9	9.6
1983	7	786.7	1501.1	3041.6	3960.1	3960.1	3960.1	9.0
1984	10	819.6	1666.5	4376.0	5942.6	5942.6	5891.4	8.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1985	34	760.7	3619.9	5127.7	7183.9	7183.9	7150.8	3.4
1986	48	368.4	4266.4	3338.8	4847.9	4815.7	4701.2	2.8
1987								
1988								
1989								
1990				5.9	10.0	10.0	7.7	4.0
1991				13.7	24.1	23.9	15.6	4.3
1992				35.2	62.5			2.8
1993				91.1	165.8			2.4
1994				87.4	162.5			2.4
1995				58.3	110.9			2.3
1996				45.8	89.0			2.3
1997				60.0	119.2			2.2
1998				11.0	22.4			2.2
1999				5.5	11.4			2.2
Subtot	100	3287.5	11611.7	17617.1	24332.2	23556.1	23346.7	
Grand Total	100	3287.5	11611.7	20954.5	28637.6	27037.5	26797.5	

16c. (U) **Program Funding Summary (Cont'd):**
Obligations and expenditures reflect Program Office records as of 31 Dec 92.

17. (U) **Production Rate Data:**

a. (U) Production Baseline Rate

A steady state production rate was not approved at the Milestone III decision; a total buy of 100 aircraft was approved instead.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		162.5		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		110.9		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		242.0		N/A	N/A

NOTE: FY 1986 was the last buy year.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	100/100

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

The concept of operations for the B-1B is based on 84 Primary Authorized Aircraft (PAA) and 352 flying Hours/PAA/year. The costs are the direct costs to support the primary personnel and to operate the aircraft. The depot cost is a summary cost which includes interim contractor support airframe and engine overhaul, repair

18a. (U) **Operating and Support Costs (Cont'd):**
components, modification installation, airframe inspection, and software support. The sustaining investment consists primarily of replenishment spares and repair parts, support equipment replacement, and modification kits for prime equipment and support equipment. The other direct cost category includes cost for installation support non-pay items, such as rents and utilities plus medical supplies. The indirect costs are for general depot support. Source and date of B-1B cost estimate: OC-ALC/FMFCC and OC-ALC/LABF, 01 Apr 93.

The concept of operations for the antecedent system has been normalized as much as possible so as to achieve an equitable comparison to the B-1B. The antecedent system figures are for the B-52 H model only and are based on 84 PAA with 392 flying hours/PAA/year. Source and date of B-52H cost estimate: OC-ALC/FMFCC and OC-ALC/LABF, 01 Apr 93.

b. (U) Costs -- (FY 84 P Constant (Base-Year) Dollars in Millions)

Cost Element	392 FH/PAA/YEAR Avg Annual Cost Per 352 FH/PAA/YEAR	Avg Annual Cost Per 84 PAA 392 FH/PAA/YEAR
MISSION PERSONNEL	114.3	130.5
O&S CONSUMABLES	118.7	103.7
DEPOT MAINTENANCE	156.9	76.4
SUSTAINING INVESTMENT	29.1	25.0
OTHER DIRECT COSTS	38.8	42.5
INDIRECT COSTS	39.1	28.7
Total	496.9	406.8

c. (U) Contractor Support Costs -- None.

AF-20 JTIDS

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93-048

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JTIDS

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 4 1993 10
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Joint Tactical Information Distribution System (JTIDS)

2. (U) DoD Component: USAF

Joint Participants:
USA/USAF/USMC/USN

3. (U) Responsible Office and Telephone Number:
JTIDS Joint Program Office (JPO)
ESC/TD
175 Vandenberg Drive
Hanscom AFB, MA 01731-0238

GM-15 DAVID CARSTALEN
Assigned: December 30, 1992
AV 478-9226 COMM 617-377-9226

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0205604N, 0604702A, 0604754F
PE 0604771D (Shared) Project XP771
PE 0604232N (Shared) Project X1977

93-C-428

[redacted]

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5. (U) Related Programs:
F-15; E-3 AWACS; NATO Airborne Early Warning and Control System; E-2C Hawkeye Carrier-Based Airborne Early Warning Aircraft; E-8 (JSTARS); Adaptable Surface Interface Terminal (ASIT); Tactical Air Operations Module (TAOM); Modular Control Equipment (MCE); JTIDS Class 1 TDMA Terminal; Modular Air Operations Center (MAOC); Airborne Battlefield Command and Control Center (ABCCC); F-14 Tomcat; Aircraft Carrier (CV); Guided Missile Cruiser (CG); Guided Missile Destroyer (DDG); Army Data Distribution System (ADDS); Forward Area Air Defense (FAAD); C2 Processor.

6. (U) Mission and Description:
The Joint Tactical Information Distribution System (JTIDS) Class 2 family of terminals will provide improved combat capability in fighter aircraft, command and control centers, and surface air defense units by providing near real-time, netted, jam-resistant, secure data and voice communications. Real-time, high capacity data transfer between weapons platforms and C3 systems is required for more effective management as the density of the air combat environment increases. The JTIDS Class 2 terminal development is a Joint Service Program with the Air Force as the lead Service. The family of JTIDS Class 2 terminals consists of the Class 2, the Class 2H (which includes a high power amplifier group, typically for command and control platforms), and the Class 2M (smaller terminal for mobile Army platforms). The United Kingdom (UK) is buying Class 2 terminals for their air defense fighters and ships and both the UK and France are buying Class 2H terminals as part of their E-3 acquisition. The Class 2 terminals use the Tactical Digital Information Link (TADIL-J) (NATO Link 16) message standard. The Class 2 terminal does not replace any existing DOD system.

The JTIDS SAR reflects only the RDT&E program. Production quantities and funding for the individual platforms are included in the budget lines for those specific programs.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
Following the DSARC IIA decision on 13 Jan 81, the Under Secretary of Defense authorized FSED of the Class 2 TDMA terminal and development of a comprehensive fighter integration program to identify cost-effective integration options. An FSED contract was awarded to Singer-Kearfott Division on 14 Jan 81 for Class 2 TDMA terminals for the Air Force and Army test and evaluation.

A DSARC IIB in Jan 82 approved FSD for the Distributed Time Division Multiple Access (DTDMA) terminal and the Navy awarded a contract to Hughes and ITT.

On 16 Oct 85, the Secretary of the Navy approved procurement of Class

7a. (U) Program Highlights (Cont'd):

2 TDMA terminals for incorporation into the E-2C, F-14D, CG, CV and DDG. In Feb 86, the Navy funded Singer for a seven-month study to assess the feasibility of integrating the Class 2 TDMA terminals into Navy platforms.

On 31 Dec 85, a contract was awarded to Singer for Class 2M development terminals for the Army and the Class 2H development terminals for the Air Force. Army milestones for the Class 2M were added and the Army program was rebaselined to meet the needs of the FAADC2I program.

In Apr 87, the Joint Program Office (JPO) completed the Multi-service Initial Operational Assessment (IOA). System performance was judged to be marginal with particular concern for terminal reliability. Preliminary and critical design reviews were conducted for the Navy Class 2 terminals. Contract modifications were awarded to Singer to procure long lead parts, interface units, and shipboard cabinets for the Navy Class 2.

In 1988, the JPO awarded contract modifications to Singer for Class 2 development terminals for E-2C, F-14D, Ships, acquisition of Class 2 (F-15) and Class 2H (E-3) terminals for JSTARS integration, Class 2M terminals to meet test requirements, and a Class 2 terminal for MCE. A Navy Program Decision Meeting (NPDM) was conducted in Jun 88 to gain approval to proceed with a restructured program resulting from FY88 funding reductions. On 1 Aug 88, the Navy was granted approval, subject to OSD funding availability, for follow-on acquisition of E-2C, F-14D, and Ship Class 2 development terminals. In Aug 88, Reliability Verification Test (RVT) #2 was completed successfully and demonstrated an instantaneous Mean Time Between Failure (MTBF) of 316.5 hours (lab). In Sep 88, Plessey Electronic Systems Corporation purchased Singer. PBD 252C fully funded our OSD program.

In 1989, the JPO completed Development/Operational Assessment (DT/OT). In Oct 89, approval was granted for a JTIDS Milestone IIIA Low Rate Initial Production (LRIP).

In 1990, the JPO implemented a Reliability Development/Growth Program and achieved the Class 2 terminal 400 hour MTBF reliability (lab) performance threshold. Production contracts were awarded to Plessey Electronic Systems Corporation (FSD leader) and Rockwell International Corporation (FSD follower) in Mar 90 for a total of 34 LRIP (Lot 1) terminals. First flight with a JTIDS Class 2 terminal occurred on three aircraft in 1990: E-8 (JSTARS) on 12 Jan 90; E-2C on 31 Jan 90; and F-14D on 29 Mar 90. The Navy Depot, North Island, San Diego, CA, was selected as the Joint Service Depot for the Class 2 terminal common items. In Nov 90, Plessey was renamed GEC-Marconi.

7a. (U) Program Highlights (Cont'd):

A Navy Program Decision Meeting (NPDM) was held 12 Mar 91 and approved LRIP for Navy F-14D, E-2C, and Ships. A revised Acquisition Program Baseline (APB) was signed 10 Jul 91. On 11 Jul 91, the Centralized Software Support Activity (CSSA) was awarded to Warner Robins Air Logistics Center (WR-ALC). Production contracts for Lot 2 were awarded on 12 Jul 91 to Rockwell Collins and GEC-Marconi for a total of 46 terminals. On 25 Jul 91, the Class 2M Reliability Growth Program successfully achieved an 836 hour MTBF based on 4025 hours of testing.

In Oct 91, the Air Force and Army jointly participated in a JTIDS network and successfully demonstrated the real purpose of JTIDS -- interoperability. In Nov 91, the Class 2H Phase I Reliability Growth Test Program successfully achieved a 400 hour MTBF based on 5000 hours of testing. In Nov 91, the first two JTIDS Tri-Service demonstrations were accomplished. An air/land/sea mission scenario was flown as part of the Multiservice Development Testing that included the USAF E-3 AWACS and F-15 Eagle, US Navy E-3C Hawkeye, F-14D Tomcat, and Cruiser USS Wainwright. On land, Navy ship simulator sites at Dam Neck and Wallops Island, VA, and the US Army Class 2 and 2M JTIDS terminals at Tobyhanna Army Depot, PA, also participated.

b. (U) Significant Developments Since Last Report --
In February and March 1992, the Navy conducted at-sea tests with terminals aboard 2 ships, 2 F-14Ds and 1 E-2C. The Operational Test and Evaluation Force (OPTEVFOR) evaluation was potentially operationally suitable and potentially operationally effective. The Navy has also completed integration of JTIDS on the E-2C and completed the Electronic Counter Counter Measure (ECCM) tests resolving the ECCM critical operational issues. Interoperability with the TS-3 has also been demonstrated. The Air Force and Army have completed all Multiservice testing. On 20 May, JTIDS Class 2 terminals successfully completed a series of three electronic warfare (EW) flight tests at Eglin AFB, FL. The terminals installed aboard the E-3, F-15 and T-39 aircraft clearly demonstrated the ability of JTIDS to operate in a jamming environment. JTIDS was proposed to the Strategic Defense Initiative Organization (SDIO) as a leading data link candidate for Theater Missile Defense (TMD). On 1 Sep 92, the Navy successfully conducted a Navy Program Decision Meeting (NPDM) which authorized the Lot 3 production award. On 22 Sep 92, JTIDS Lot 3 contract awards were awarded to Rockwell Collins and GEC-Marconi for a total of 51 terminals and Centralized Software Support Agency (CSSA) related equipment and services. FCA/PCA activity scheduled to be completed was accomplished in Nov 92. Preparations for F-15 Operational Utility Evaluation (OUE) are ongoing. The JTIDS Class 2

7b. (U) Program Highlights (Cont'd):

TDMA terminal is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --
The Commander Operational Test and Evaluation Force (COMOPTEVFOR) OT-IIC report received late January 1993 indicated they could no longer attest to JTIDS effectiveness and suitability due to the number of uncorrected deficiencies. As a result, the JTIDS program conducted 3 Test and Evaluation Coordination Groups and multiple OPNAV and ASN flag level reviews to develop a strategy to complete JTIDS testing. Nearly half of the COMOPTEVFOR deficiencies have been adjudicated as beyond the scope of the current program and additional DT and OT events have been scheduled prior to TECHEVAL/OPEVAL. In February 1993, 2 F-14Ds, 2 E-2Cs and 2 ship JTIDS equipped units successfully participated in the Joint Chiefs of Staff Multi-TADIL Joint Air Defense Operations/Joint Engagement Zone (JADO/JEZ) exercise in the Southern California (SOCAL) area. JTIDS was declared the "Link of Choice."

The Navy Shipboard Reliability Growth Test was successfully completed on 4 March 1993 two months ahead of schedule and exceeded the test goals of a 500 hour Mean-Time-Between-Failure (MTBF). The results were a 1052 hour MTBF. During the growth test, 4206 operating hours were accumulated on two networking terminals. The test was conducted at GEC-Marconi Electronic Systems Corporation using a mission profile consisting of Shipboard temperature and humidity environments.

8. (U) Threshold Breaches:
There are schedule breaches to the 10 July 1991 Acquisition Program Baseline (APB) which are Non-PD Controlled. A Program Deviation Report (PDR) and revised APB are in process. In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items being reported.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Delivery of 1st FSD Terminal			
Class 2 (F-15)	JUL 83	JUN 84	JUN 84
Class 2 (F-14)	N/A	SEP 89	SEP 89
Class 2H (E-3)	N/A	OCT 88	OCT 88
Class 2H (E-2)	N/A	DEC 89	DEC 89
Class 2H (Ships)	N/A	DEC 89	DEC 89

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Class 2/2H (JSTARS)	N/A	NOV 87	NOV 87
Class 2/2H (MCE)	N/A	JUN 90	OCT 90
Class 2M (FAAD)	N/A	MAR 88	MAR 88
IOT&E/IOA Complete			
Class 2 (F-15)	JAN 86	APR 87	APR 87
Class 2 (F-14) (OPEVAL)	N/A	JUN 93	MAY 94(Ch-1)
Class 2H (E-3)	N/A	SEP 91	MAR 92(Ch-2)
Class 2H (E-2) (OPEVAL)	N/A	JUN 93	MAY 94(Ch-1)
Class 2H (Ships)	N/A	JUN 93	MAY 94(Ch-1)
Class 2/2H (JSTARS)	N/A	SEP 95	SEP 95
Class 2/2H (MCE)	N/A	NOV 95	NOV 95
Class 2M (FAAD)	N/A	MAY 92	TBD (Ch-3)
Complete Multi-Service Operational Test	N/A	APR 93	TBD (Ch-3)
Milestone IIIA (Tri-Service DAB)			
Class 2 (F-15)	JUN 86	AUG 89	SEP 89
Class 2 (F-14)	N/A	AUG 89	SEP 89
Class 2H (E-3)	N/A	AUG 89	SEP 89
Class 2H (E-2)	N/A	AUG 89	SEP 89
Class 2H (Ships)	N/A	AUG 89	SEP 89
LRIP Contract Award			
Class 2	N/A	MAR 90	MAR 90
Class 2H	N/A	MAY 91	JUL 91
Delivery of 1st Production Unit			
Class 2	JUN 88	APR 92	MAR 92(Ch-4)
Class 2H 2/	N/A	MAY 93	MAY 93
Milestone IIIB (Tri-Service DAB)			
Class 2/2H	N/A	OCT 93	FEB 95(Ch-5)
Milestone III			
Class 2M (FAAD)	N/A	SEP 93	TBD (Ch-3)
Full Rate Contract Award			
Class 2/2H	N/A	FEB 94	MAR 95(Ch-6)
Class 2M (FAAD)	N/A	FEB 94	TBD (Ch-3)
Delivery of 1st Production Unit 2/			
Class 2M (FAAD)	N/A	JUN 96	TBD (Ch-3)
IOC			
Class 2H	SEP 88	SEP 93	MAY 94(Ch-7)
Class 2M (FAAD) 1/	N/A	DEC 93	TBD (Ch-3)
Program Initiation	MAR 76	N/A	MAR 76
Class 2 TDMA ADM Delivery	AUG 78	N/A	AUG 78
Milestone II	JAN 81	N/A	JAN 81

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
TDMA Development Contract Award	JAN 81	N/A	JAN 81
Preliminary OT&E	JAN 81	N/A	JAN 82

1/ JTIDS First Unit Equipped (Interim) with R&D assets.

2/ Delivery due 24 months after contract award.

b. (U) Previous Change Explanations --

Actual delivery dates for the first FSD terminals for the Navy was Nov 89 and the Army was Mar 88. Milestone IIIA for the Air Force was delayed one month by the DAB committee to Sep 89. Proposal preparation and funding constraints delayed production contract award to Feb 90. Due to this delay, delivery of the first production unit for the Air Force (F-15) slipped to Apr 92. Full production for the Army Class 2M was delayed until Oct 92 due to program restructuring and Army funding constraints. LRIP contract award dates changed for E-3, JSTARS, MCE and FAADC2I. These milestones are externally managed and no longer reported. Proposal preparation and staffing complexities delayed production contract award of Lots 1 and 2 as follows: F-15 to May 90, and Navy F-14, E-2 and Ships to May 91. Milestone IIIB slipped to Oct 93 due to completion of exit criteria to the 11 Oct 89 JTIDS Milestone IIIA ADM. The Army Program was restructured changing Milestone IIIA to Sep 93 and Milestone IIIB to TBD. Based on ASD/C3I direction to rebaseline Milestone IIIB to Oct 93, full-rate contract award dates slipped for AF E-3, JSTARS and MCE to Feb 94. IOT&E milestones, externally managed platforms, slipped for E-3 to Sep 91, JSTARS to Sep 95 and MCE to Nov 95 due to reasons unrelated to the JTIDS terminal. The 1st FSD terminal for MCE was delivered in Oct 90 vs Jun 90. A revised Acquisition Program Baseline (APB) was signed 10 Jul 91. The Army will now conduct a Milestone III in Oct 93. The host platform manager for E-3 informed the JPO that E-3 restructured and the IOT&E date slipped from Sep 91 to Dec 91. Milestones were combined to simplify reporting externally managed platforms by class of terminal versus by individual platform. The E-3 IOT&E date slipped from Dec 91 to Feb 92 due to rebaselining of the program. The MCE IOT&E date (Nov 94) was erroneously reported in the Sep 91 SAR.

c. (U) Current Change Explanations --

(Ch-1) The Navy OPEVAL is now scheduled for completion in May 94 vs Jun 93 due to scheduling conflicts with Navy assets and the

9c. (U) Schedule (Cont'd):
requirement for additional developmental testing and operational testing required by OPTEVFOR prior to OPEVAL.

(Ch-2) The E-3 Program Office informed the JPO that E-3 IOT&E completed Mar 92 vs Feb 92.

(Ch-3) The Army Class 2M (FAAD) Milestones are "to be determined" as the program is currently non-executable. If the Army Program is not restructured, it will be removed from the JTIDS Acquisition Program Baseline.

(Ch-4) The first Class 2 terminal was delivered early in Mar 92 vs Apr 92.

(Ch-5) Milestone IIIB (Now Milestone III) for the Class 2/2H is now scheduled for Feb 95 vs Oct 93 due to a delay in Navy testing as a result of scheduling conflicts with Navy assets and an additional DT/OT period prior to the start of TECHEVAL/OPEVAL. OPEVAL is an ADM requirement prior to the Milestone III decision.

(Ch-6) Full-rate contract award for Class 2/2H is now Mar 95 vs Feb 94 due to the Milestone III schedule change.

(Ch-7) The Navy informed the JPO that IOC for the Class 2H is now May 94 vs Sep 93 due to the revised CVBG deployment schedule.

d. (U) References --

(U) Development Estimate:
Secretary of Defense Decision Memorandum (SDDM), dated 16 January 1981, Subject: "JTIDS Milestone II Approval (Class 2 Terminal FSED)"; Decision Coordinating Paper (DCP), dated 31 March 1981.

(U) Approved Program:
DAB Approved Acquisition Program Baseline dated 10 July 1991.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Coded Data Rate (double pulse Tx or Rx)(Kbps)	28.8	28.8	/ 28.8	115.2	115.2
Voice Channels Per Net	3	3	/ 1	2	2
Coded Message Error Probability	.01	.01	/ .02	.01	.01

10a. (U) Performance Characteristics (Cont'd):

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

ACRONYM:

1/ MTBF - Mean Time Between Failure

b. (U) Previous Change Explanations --

Packed-4 messages (thus, yielding 115.2 kbps data rate) during Post-DAB Phase I DT&E (Oct 89 - Nov 90). 1200 nm relay range demonstrated. Based on the revised Acquisition Program Baseline (APB), dated 10 Jul 91, Numbers of Nets and Rel Nav Accuracy performance characteristics were deleted and Ranging Accuracy Below 150 nm was added.

c. (U) Current Change Explanations -- None.

10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Development Estimate:
Secretary of Defense Decision Memorandum (SDDM), dated 16 January 1981, Subject: "JTIDS Milestone II Approval (Class 2 Terminal FSED)"; Decision Coordinating Paper (DCP), dated 31 March 1981.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 10 July 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	309.0	1499.9	1447.7
Procurement	0.0	829.8	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 81 Base-Year $	309.0	2329.7	1447.7
Escalation	73.5	1415.0	569.0
Development (RDT&E)	(73.5)	(658.9)	(569.0)
Procurement	(0.0)	(756.1)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	382.5	3744.7	2016.7

Approved program reflects Program Director (PD) controlled and non-PD controlled funding requirements (both procurement and RDT&E funding).

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	971	N/A
Total	0	971	0

c. (U) Foreign Military Sales/International Cooperative Programs --

United Kingdom Royal Navy	$5.2M	$0	$0
French	$2.5M	$0	$0

Commitments to date are 3 development terminals for the United Kingdom Royal Navy and 2 development terminals for the French.

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Secretary of Defense Decision Memorandum (SDDM), dated 16 January 1981, Subject: "JTIDS Milestone II Approval (Class 2 Terminal FSED)"; Decision Coordinating Papaer (DCP), dated 31 March 1981.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 10 July 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2016.7	1949.9	2016.7
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	382.5	0.0	0.0	382.5
Previous Changes:				
Economic	-38.3	-	-	-38.3
Quantity	+740.9	-	-	+740.9
Schedule	+22.8	-	-	+22.8
Engineering	+352.7	-	-	+352.7
Estimating	+433.2	-	-	+433.2
Other	-	-	-	-
Support	+56.1	-	-	+56.1
Subtotal	+1567.4	-	-	+1567.4
Current Changes:				
Economic	-2.7	-	-	-2.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+69.5	-	-	+69.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+66.8	-	-	+66.8
Total Changes	+1634.2	-	-	+1634.2
Current Estimate	2016.7	-	-	2016.7

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	309.0	0.0	0.0	309.0
Previous Changes:				
Quantity	+509.1	-	-	+509.1
Schedule	-1.5	-	-	-1.5
Engineering	+243.8	-	-	+243.8
Estimating	+275.7	-	-	+275.7
Other	-	-	-	-
Support	+38.6	-	-	+38.6
Subtotal	+1065.7	-	-	+1065.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+73.0	-	-	+73.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+73.0	-	-	+73.0
Total Changes	+1138.7	-	-	+1138.7
Current Estimate	1447.7	-	-	1447.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates.

Quantity: Revised for Air Force quantity increase from 15 to 19 development terminals; Air Force quantity increase from 19 to 37 to accommodate TADIL-J efforts; Army increase from 6 to 33; increase of 29 in 1988; and 10 additional terminals for testing in 1989.

Schedule: Increase due to 6 month schedule slip of RDT&E; deletion of Army FY85 test support funds.

Engineering: Increased scope of Software Support Facility, Contractor Software Support, F-15 Avionics Intermediate Shop, sustaining F-16 planning effort,

13b. (U) Cost Variance Analysis (Cont'd):

F-15 IOT&E, Class 2 Logistics, F-15 Group A; decrease in scope of F-16 and Bilingual Interface; added development of Class 2 terminal High Power Amplifier and interfaces for upgrade in E-3 and MCE platforms to TADIL-J capability; F-15 PSE added to program; addition of Army budget for DT/OT IIA testing. MIDS FSD added to program.

Estimating: Original cost estimate included all future terminals, impact of revised indicies for prior year dollars, Class 1 work removal, Undistributed Budget cuts; adjustments to correct errors in 31 Dec 83, 31 Dec 84, and 31 Dec 85 SARs; Gramm-Rudman cuts; out-year inflation changes; reinstatement of Army funds managed at OSD; FY 87 and FY 89 Undistributed Budget cuts. Adjustments for Current and Prior Year Escalation; out-year funding added; FY 90-94 increased to fund follow-on developments, testing, logistics, and program support. Program restructure reduced Navy effort. However, prior estimates did not include platform integration costs associated with terminals. FY 93-94 increase to fund USAF testing, integration, MIDS development, and support. In 1989, adjustment for current and prior year escalation; reduction of FY 90-94 AF and OSD funding; out-year funding added for AF and Navy funding; MIDS transferred to Navy. In 1990, funding increased for preplanned product improvements; Navy restructured causing impact to FY 87-95 funding; release of withhold avoided stop work; reduction in JTIDS supportability, logistics, interoperability and product improvement due to funding constraints; and continue data link development into FY 95-97. In 1991, funding was added for ABCCC integration efforts; adjustment for current and prior year escalation; Navy restructuring due to fiscal constraints resulted in increased integration efforts in FY 91-94. USAF fiscal constraints resulted in reduced estimate of Preplanned Product Improvements in FY 91-97. OSD increase resulted from revised data link development costs.

Support: Develop, demonstrate, and evaluate direct link between E-3A and HIMAD elements using Class 2 terminals.

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Escalation Indicies, 3 Mar 93 (Economic)	N/A	-2.7
Adjustment for Current and Prior Year	-3.3	-4.4
Navy Current and Prior Adjustment (Estimating)	-1.2	-1.6
USAF Current and Prior Adjustment (Estimating)	-0.2	-0.4
OSD Current and Prior Adjustment (Estimating)	-1.8	-2.4
Army Current and Prior Adjustment (Estimating)	-0.1	--
Revised program estimate.	+76.3	+73.9
Navy adjustment for actuals; fiscal years not previously reported (95-97) extension of FYDP (98-99) Fiscal Years budget (76-80) previously unreported resulting from SPO Budget (Estimating)	+23.3	+41.8
USAF Fiscal Years budget (76-80) previously unreported resulting from SPO Budget Review. (Estimating)	+55.7	+44.8
USAF extension of FYDP (98-99) (Estimating)	+16.2	+29.9
USAF adjustment for actuals; Congressional adjustments. (Estimating)	+14.8	+15.8
OSD Extension of FYDP (98-99) and budget adjustment (93-97) (Estimating)	-33.7	-58.4
RDT&E Subtotal	+73.0	+66.8

14. (U) **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

(U) Not Applicable.

15. (U) **Contract Information** (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) DEVELOPMENT:	Initial Contract Price		
	Target	Ceiling	Qty
GEC-MARCONI, TOTOWA, NJ F19628-86-C-0035, FFP Award: December 31, 1985 Definitized: December 31, 1985	$23.6	N/A	6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$428.1	N/A	0	$428.1	$428.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

This is a Joint Air Force/Army/Navy/Marine Corps contract with Air Force as lead service. Changes in current Target Price since last report ($10.5M Increase). Pre-Operational Support $2.0M; Class 2M ADDSI Hardware Upgrade $0.1; FQT-5B Modification $1.0; Single CPU Product Improvement Phase II $2.0M; Incremental Funding for Ship RD/GT; FQT-5B/Navy Block II $4.4M; Common Signal Processor Product Improvement Phase III $1.0M.

Cost and Schedule Variances are not required on this FFP contract.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 75.0% (18 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 88.1% ($1777.1 / $2016.7)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1777.1	63.8	42.8	133.0	2016.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1777.1	63.8	42.8	133.0	2016.7

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1976				0.1	0.1	0.1	0.1	6.6
197T								
1977				1.4	1.0	1.0	1.0	2.9
1978				1.0	0.8	0.8	0.8	2.6
1979				7.5	6.4	6.4	6.4	6.8
1980				4.6	4.3	4.3	4.3	9.4
1981				2.8	2.9	2.9	2.9	11.9
1982				10.9	12.2	12.2	12.2	9.2
1983				17.0	19.9	19.9	19.9	4.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1984				17.6	21.3	21.3	21.3	3.8
1985				18.1	22.7	22.7	22.7	3.4
1986				10.8	13.9	13.9	13.9	2.8
1987								2.7
1988				3.0	4.2	4.2	4.2	3.0
Subtot				94.8	109.7	109.7	109.7	
Army				94.8	109.7	109.7	109.7	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1987				27.6	37.1	37.1	35.5	2.7
1988				74.7	103.5	103.5	98.9	3.0
1989				79.3	113.5	113.5	110.2	4.2
1990				57.6	85.8	85.8	82.3	4.0
1991				47.4	73.2	73.2	69.0	4.3
1992				39.3	62.1	62.1	52.4	2.8
1993				25.6	41.5	27.0	5.9	2.4
1994				7.1	11.7			2.4
1995				2.9	4.9			2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1996				4.2	7.3			2.3
1997				4.8	8.5			2.2
1998				5.9	10.7			2.2
1999				5.7	10.5			2.2
Subtot				382.1	570.3	502.2	454.2	
Navy				382.1	570.3	502.2	454.2	

Obligations and expenditures reflect Navy Program Office records as of 6 April 1993.

Appropriation: 3600 Research, Development, Test + Eval, AF								
1976				12.0	8.2	8.2	8.2	6.6
197T								
1977				6.9	5.0	5.0	5.0	2.9
1978				14.9	11.7	11.7	11.7	2.6
1979				7.9	6.7	6.7	6.7	6.8
1980				19.8	18.7	18.7	18.7	9.4
1981				18.8	19.6	19.6	19.6	11.9
1982				35.1	39.2	39.2	39.2	9.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1983				29.6	34.6	34.6	34.6	4.9
1984				20.4	24.7	24.7	24.7	3.8
1985				48.8	61.2	61.2	61.2	3.4
1986								2.8
1987								2.7
1988				15.8	21.9	21.9	19.4	3.0
1989				34.0	48.7	48.7	48.7	4.2
1990				24.2	36.1	36.1	27.5	4.0
1991				24.0	37.1	37.1	22.6	4.3
1992				9.7	15.4	14.7	0.2	2.8
1993				9.3	15.1	2.6		2.4
1994				9.7	16.1			2.4
1995				7.0	11.9			2.3
1996				8.4	14.6			2.3
1997				8.2	14.5			2.2
1998				8.2	14.8			2.2
1999				8.2	15.1			2.2
Subtot				380.9	490.9	390.7	348.0	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
USAF				380.9	490.9	390.7	348.0	

Obligations and expenditures reflect JTIDS Program Office records as of 31 March 1993.

Appropriation: 0400 RDT&E, Defense Agencies

1986				154.4	198.3	198.3	198.3	2.8
1987				109.5	147.0	147.0	147.0	2.7
1988				56.7	78.6	78.6	49.2	3.0
1989				41.9	60.0	60.0	58.1	4.2
1990				46.5	69.2	69.2	55.4	4.0
1991				42.9	66.2	66.2	35.4	4.3
1992				55.3	87.4	85.5	4.4	2.8
1993				24.8	40.1	8.3	0.5	2.4
1994				21.7	36.0			2.4
1995				15.3	26.0			2.3
1996				9.2	16.0			2.3
1997				6.2	11.0			2.2
1998				2.8	5.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1999				2.7	5.0			2.2
Subtot				589.9	845.8	713.1	548.3	
DoD				589.9	845.8	713.1	548.3	
Grand Total				1447.7	2016.7	1715.7	1460.2	

Obligations and expenditures reflect JTIDS Program Office records as of 31 March 1993.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

JTIDS SAR reflects only the RDT&E program. Production quantities and funding for the individual platforms are included in those specific programs.

17b. (U) **Production Rate Data (Cont'd):**

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	168/151
Procurement	0/0

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

O&S costs were developed in support of the JTIDS Oct 89 DAB IIIA. The ground rules and assumptions used in the development of the O&S costs are as follows:

(1) O&S includes a 9-year Phase-in and 11 years of steady state operation for a total span of 20 years beginning in FY92 with the first installation and going through FY11.

(2) Integration and Installation costs are included for TAOM, E-2C, Navy Ships, and F-14D. Air Force costs (including Group A Procurement costs) are addressed only if they are not part of a platform block upgrade program or if they can be uniquely identified.

(3) Logistics Support is based on hardware depot at Army Sacramento (FY95) activation, software depot at Warner Robins (FY92 activation), and a peacetime deployment scenario.

18a. (U) Operating and Support Costs (Cont'd):

(4) Terminal procurement quantities for production are based on the 14 August 1989 Buy Schedule.

The information provided above reflects costs associated with platforms that are externally managed and not within the control of the JPO. We expect to update the O&S cost estimate in support of our Feb 94 DAB III.

The JTIDS Class 2 has no antecedent system.

b. (U) Costs -- (FY Tota Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per Antecedent
Depot Maintenance	3.7	N/A
Depot Non-Maintenance	1.9	N/A
Unit Mission Personnel	0.7	N/A
Training	0.2	N/A
Sustaining Investment	2.0	N/A
Common Support Equipment	0.0	N/A
Software Support	2.7	N/A
Other Govt Costs (ISEA)	0.6	N/A
Total	11.8	N/A

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Maintenance & Spt	2.6	1.3	1.3	1.2	6.4
Total	2.6	1.3	1.3	1.2	6.4

A-16 KIOWA WARRIOR

92-047

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(QSA)823)
PROGRAM: OH-58D Kiowa Warrior

AS OF DATE: December 31, 1992

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AS AMENDED

CLEARED
FOR OPEN PUBLICATION

MAY 28 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

21

1. (U) Designation and Nomenclature (Preferred Name):
OH-58D Kiowa Warrior

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

KIOWA WARRIOR PROGRAM
ATTN: SFAE-AV-ASH
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

COL EDWIN P. GOOSEN
Assigned: July 12, 1992
AV 693-1360 COMM (314) 263-1360

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 64220 Project D518
PROCUREMENT:
APPN 2031 ICN AA0961 (Army)
APPN 2031 ICN AZ2200 (Army)

Concur in Classification
Declassify on: MAY 1998

[redacted]

OASD(PA) DFOISR 93-C-733

[redacted]

5. (U) Related Programs:
OH-58D AHIP

6. (U) Mission and Description:
The Kiowa Warrior is a modification of the OH-58D Army Helicopter Improvement Program (AHIP) helicopter and includes Air-to-Air Stinger (ATAS) and Air-to-Ground (ATG) Weapons. The ATAS provides a self defense capability against airborne threats. The ATG weapons include Hellfire missile, Hydra 70 rockets, a .50 caliber machine gun to provide defense against ground threats and the ability to autonomously engage high priority targets. In addition, Multipurpose Light Helicopter (MPLH) kits are being developed to provide rapid deployment capability (15 minute flyaway from C-130 off-load), limited troop transport (6 personnel), emergency casualty evacuation (2 litters), and 2000 pound external cargo hook capability. The Kiowa Warrior is a single engine, four-bladed main rotor light helicopter with a low light television, thermal imaging system and laser rangefinder/designator incorporated into an above the rotor Mast Mounted Sight (MMS). It is designed to operate autonomously at stand-off ranges providing armed reconnaissance, command and control, target acquisition and designation under day/night, hot and adverse weather conditions. The Kiowa Warrior can designate for precision guided munitions, Apache aircraft and other airborne weapons platforms. Using the airborne target handover system, the Kiowa Warrior is capable of providing adjustment of conventional artillery as well as handing over targets to Apache aircraft and other airborne weapons platforms. The Kiowa Warrior will provide forward deployed Air Cavalry reconnaissance units and contingency forces with the ability to see, fight, and survive at night.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
On 30 November 1979, a special Army Systems Acquisition Review Council (ASARC) reaffirmed the need for an Advanced Scout Helicopter (ASH) to incorporate day/night target acquisition/designation capabilities, improved Nap-of-Earth (NOE) and tactical communication and navigation, and an aircraft performance improvement which would permit operation with the AH-64 Apache in the hot-day, high altitude environment. The Required Operation Capability (ROC) document was approved on 9 January 1981. On 21 September 1981, a Full Scale Engineering Development (FSED) contract was awarded to Bell Helicopter Textron, Incorporated (BHTI), for development and qualification of an improved scout helicopter to be identified as the OH-58D AHIP. Formal Government Development Testing (DT) began in July 1984. An ASARC was held on 23 July 1985 for the purpose of type classifying the OH-58D as Standard A and to proceed into full scale production. A Secretary of Defense Decision Memorandum (SDDM), signed 7 October 1985, approved the OH-58D for the field artillery aerial observer role. An Armed OH-58D ASARC, held 8 August 1989,

7a. (U) Program Highlights (Cont'd):

recommended approval for arming OH-58D aircraft with ATG weapons. A Secretary of the Army memorandum, dated 8 January 1990, approved the armed retrofit program to fully arm all 243 OH-58Ds. This memorandum also authorized configuring 81 aircraft for the Multipurpose Light Helicopter (MPLH) mission and designated the popular, Kiowa Warrior, for the OH-58D armed AHIP. On 30 May 1990, the VCSA approved the concept of procuring MPLH kits for all active component Kiowa Warriors. Congress added $200M in FY 91 for procurement of 36 OH-58D helicopters for the Army National Guard. FY 92 funds available in the Desert Storm Supplemental Account were appropriated for the procurement of 12 OH-58D Kiowa Warrior aircraft to replace OH-58Cs and OH-58Ds lost during the Desert Shield/Desert Storm conflict.

b. (U) Significant Developments Since Last Report --
In July 1992, the Kiowa Warrior PMO was allocated $133.0M for the procurement of 24 OH-58D Kiowa Warrior helicopters.

The FY 93 Joint Appropriations Conference identified $225.0M for the procurement of 36 OH-58D Kiowa Warriors (Lot 10) and $8.1M RDT&E for the completion of the development effort begun in FY 92 on the MPLH kits and the training devices.

(U) The OH-58D Kiowa Warrior aircraft is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --
Lot 10 contract was awarded 5 March 1993; aircraft delivery will begin August 1994. These current values are reported in Section 9.

8. (U) Threshold Breaches:
There is a Procurement cost breach to the approved Acquisition Program Baseline (APB), dated 6 April 1993. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Development Test II (DT II)	N/A	AUG 84	AUG 84
First Production Contract Award (LRIP) (16)(FY83/84)	OCT 84	SEP 84	SEP 84
Operational Test II (OT II)	JAN 85	FEB 85	FEB 85
Milestone III (DSARC III)	N/A	OCT 85	OCT 85

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Second Production Contract Award (44) (FY85)	JUN 85	OCT 85	OCT 85
First Production Deliveries Start	N/A	DEC 85	DEC 85
Second Production Deliveries Start	N/A	JUN 86	JUN 86
Third Production Contract Award (39) (FY86)	N/A	AUG 86	AUG 86
Production Verification Test Complete	N/A	OCT 86	OCT 86
First Unit Equipped (CONUS)	N/A	MAR 87	MAR 87
Initial Operational Capability	JUN 86	MAY 87	MAY 87
User Follow-on Test & Evaluation Army Aerial Scout Test	N/A	MAY 87	MAR 87
Production Reliability Scoring Conference	N/A	JUN 87	JUN 87
Third Production Deliveries Start	N/A	JUN 87	JUN 87
First Unit Equipped (USAREUR)	N/A	JUN 87	JUN 87
Fourth Production Contract Award (36) (FY87)	N/A	SEP 87	SEP 87
Production (RAMLOG) Scoring Conference	N/A	FEB 88	FEB 88
First Unit Equipped (EUSA)	N/A	APR 88	APR 88
Fourth Production Deliveries Start	N/A	JUL 88	JUL 88
Production (RAMLOG) Scoring Conference	N/A	AUG 88	AUG 88
Production (RAMLOG) Scoring Conference	N/A	OCT 88	OCT 88
Fifth Production Contract Award (36)(FY88)	N/A	DEC 88	DEC 88
RAM Assessment	N/A	JAN 89	JAN 89
KW Sixth Production Contract Award 1/	N/A	JUN 89	JUN 89
Fifth Production Deliveries Start	N/A	JUL 89	JUL 89
ASARC IV/III Decision	N/A	AUG 89	AUG 89
Qualification Test Contract Award	N/A	DEC 90	APR 91
KW Seventh Production Contract Award 1/	N/A	JUN 90	JUN 90
KW Sixth Production Delivery Start	N/A	JUL 90	JUL 90
Qualification Test			
Start	N/A	JUL 91	JUN 91
Complete	N/A	DEC 93	DEC 93(Ch-1)
KW Eighth Production Contract Award (ANG) 1/ 2/	N/A	DEC 90	DEC 90
KW Seventh Production Delivery Start	N/A	JUL 91	JUL 91
PEO In-Process Review	N/A	MAY 92	APR 92(Ch-2)
KW First Production Contract Award (Retrofit)	N/A	DEC 91	JAN 92

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
KW Ninth Production Contract Award 1/3/	N/A	APR 92	APR 92
KW Eighth Production Delivery Start (ANG)	N/A	JUL 92	JUL 92
KW First Production Delivery Start (Retrofit)	N/A	SEP 92	DEC 92
KW First Unit Equipped	N/A	MAY 93	MAY 93(Ch-3)
KW Second Production Contract Award (Retrofit)	N/A	DEC 92	DEC 92
KW Initial Operational Capability	N/A	MAY 93	JUN 93(Ch-4)
KW Tenth Production Contract Award 1/	N/A	N/A	MAR 93(Ch-5)
KW Ninth Production Delivery Start	N/A	JUL 93	AUG 93
KW Third Production Contract Award (Retrofit)	N/A	DEC 93	DEC 93
KW Eleventh Production Contract Award 1/	N/A	N/A	
KW Tenth Production Delivery Start	N/A	N/A	AUG 94(Ch-5)
KW Fourth Production Contract Award (Retrofit)	N/A	DEC 94	DEC 94
KW Eleventh Production Delivery Start	N/A	N/A	
KW Final Production Delivery	N/A	APR 96	AUG 96
KW Last Unit Equipped	N/A	MAY 96	SEP 96

Milestone Footnotes:

1/ The last six aircraft in Lot 6 and all aircraft in the subsequent contract awards will be armed provisioned and identified as Kiowa Warrior.

2/ Congress added $200M in FY 91 for procurement of 36 OH-58D Kiowa Warrior aircraft for the Army National Guard.

3/ FY 92 Joint Conference authorized the procurement of additional Kiowa Warrior aircraft.

b. (U) Previous Change Explanations --

Full Production Contract award slipped from Jun 85 to Oct 85 due to a delay in the ASARC/DSARC process. IOC slipped from Jun 86 to May 87 due to VCSA decision requiring a follow-on evaluation to qualify the AHIP for attack and air cavalry roles. Seventh Production Contract award changed from N/A to Jun 90 and Seventh Production Delivery Start changed from N/A to Jul 91 when FY 90 funding for 36 OH-58Ds was restored. PEO IPR slipped from Sep 91 to May 92 due to funding

9b. (U) Schedule (Cont'd):
withhold which delayed testing program initiation; a prerequisite to the IPR. KW First Production Delivery Start changed from Sep 92 to Jan 93, Qualification Test Contract Award, Apr 91 vs Mar 91, Qualification Test Start, Jun 91 vs May 91, KW First Production Contract Award (Retrofit), Jan 92 vs Dec 91, and KW FUE, Nov 92 to Mar 93.

c. (U) Current Change Explanations --

(Ch-1) Qualification Test Completion slipped from Sep 92 to Dec 93 because of inadequate FY92 RDT&E funding which would not allow for completion of test until FY93 RDT&E funds were appropriated.

(Ch-2) PEO In-Process Review was completed in Apr 92, one month ahead of the May 92 schedule.

(Ch-3) First Unit Equipped date slipped from Mar 93 to May 93 based on ODCSOPS message citing a new date because of the OH-58D grounding and an increased aircraft requirement at the training base.

(Ch-4) KW Initial Operating Capability date slipped from May 93 to Jun 93 based on ODCSOPS message citing a new date because of the OH-58D grounding and an increased aircraft requirement at the training base.

(Ch-5) Reflects FY93 Joint Appropriations Conference funding for Lot 10.

d. (U) References --

(U) Development Estimate:
SDDMe, 31 August 1982 and 7 October 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 06 April 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Vertical Rate of Climb (ft/min)				
2000 ft & 70 deg F	650	650 / 450	650	650
4000 ft & 95 deg F	500	250 / HOGE	500	500

10a. (U) **Performance Characteristics (Cont'd):**

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Mean Time to Repair (hrs) (AVUM and AVIM)	2.0	2.0 / 2.0	2.0	2.0

The above data (with the exception of Probability of Hellfire Missile Hit, Probability of ATAS Hit, and Maintenance Ratio) reflects AHIP performance. Kiowa Warrior performance data will not be available until completion of TECOM testing.

b. (U) Previous Change Explanations --

Mean time between mission affecting failure defines reliability IAW Nov 84 ROC revision. The maintenance ratio for AVUM changed from 1.8 to 3.0 to reflect the higher maintenance manhours per flight hour of the OH-58D Kiowa Warrior vs the AHIP.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
SDDMs, 31 August 1982 and 7 October 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 06 April 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	213.5	231.9	237.0
Procurement	1454.4	1479.0	1718.8
Airframe	(329.7)		(475.8)
Engine	(67.6)		(79.2)
MMS/CDS	(559.1)		(556.1)
Other Avionics	(148.9)		(69.5)
Armament	(0.0)		(205.0)
Nonrecurring	(47.6)		(19.8)
Total Flyaway	(1152.9)		(1405.4)
Other Weapon Systems	(44.3)		(149.8)
Peculiar Support	(176.6)		(41.5)
Initial Spares	(80.6)		(122.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 82 Base-Year $	1667.9	1710.9	1955.8
Escalation	863.7	689.6	818.4
Development (RDT&E)	(14.6)	(22.3)	(24.8)
Procurement	(849.1)	(667.3)	(793.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2531.6	2400.5	2774.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	578	255	315
Total	578	255	315

Note: Excludes 5 RDT&E prototype from the Current Estimate that is not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- Commitments to date are for 20 aircraft for Taiwan for a total of $286.5 million.

d. (U) Nuclear Costs -- None

e. (U) References --

(U) Development Estimate:
SDDMs, 31 August 1982 and 7 October 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 06 April 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2774.2	2400.5	2774.2
(2) Quantity	315	255	315
(3) Unit Cost	8.807	9.414	8.807
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	325.0	325.0	147.8
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	325.0	325.0	147.8
(2) Quantity	36	36	0
(3) Unit Cost	9.028	9.028	N/A

Note: FY 93 funding authorized by Congressional conferees will procure 36 new OH-58D Kiowa Warrior aircraft. In addition to this procurement effort, the PMO will retrofit 38 OH-58D AHIP's to the armed configuration (Kiowa Warrior). The following is a breakout of the FY 93 program:

(FY 93)	CURRENT ESTIMATE
Current Procurement/Production Program	
Cost	225.0
Quantity	36
Unit Cost	6.250
Retrofit Program Cost	100.0
Quantity	N/A
Unit Cost	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	228.1	2303.5	0.0	2531.6
Previous Changes:				
Economic	-1.3	-306.3	-	-307.6
Quantity	-	-923.1	-	-923.1
Schedule	-	+185.9	-	+185.9
Engineering	+58.6	+692.8	-	+751.4
Estimating	-31.2	+259.2	-	+228.0
Other	-	-	-	-
Support	-	-65.7	-	-65.7
Subtotal	+26.1	-157.2	-	-131.1
Current Changes:				
Economic	-	-15.2	-	-15.2
Quantity	-	+178.1	-	+178.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+7.6	+134.1	-	+141.7
Other	-	-	-	-
Support	-	+69.1	-	+69.1
Subtotal	+7.6	+366.1	-	+373.7
Total Changes	+33.7	+208.9	-	+242.6
Current Estimate	261.8	2512.4	-	2774.2

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	213.5	1454.4	0.0	1667.9
Previous Changes:				
Quantity	-	-631.2	-	-631.2
Schedule	-	+75.0	-	+75.0
Engineering	+42.4	+417.5	-	+459.9
Estimating	-24.0	+193.8	-	+169.8
Other	-	-	-	-
Support	-	-30.5	-	-30.5
Subtotal	+18.4	+24.6	-	+43.0
Current Changes:				
Quantity	-	+109.9	-	+109.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.1	+87.5	-	+92.6
Other	-	-	-	-
Support	-	+42.4	-	+42.4
Subtotal	+5.1	+239.8	-	+244.9
Total Changes	+23.5	+264.4	-	+287.9
Current Estimate	237.0	1718.8	-	1955.8

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates.

Engineering: Inclusion of the Optical Improvement Program (OIP). Inclusion of the Kiowa Warrior and MPLH programs.

Estimating: Congressionally directed reduction in Total Risk Assessing Cost Estimate (TRACE). Revised computational method for FY 82 base year dollars. Turn-in of contract contingency funds and Gramm-Rudman-Hollings cuts. Correction of rounding error from 31 Dec 87 SAR. Adjustments to training device development and testing estimates. Adjustment for current and prior inflation offset. Congressional withhold of RDTE funding caused

13b. (U) Cost Variance Analysis (Cont'd):

schedule slippage resulting in PEO reprogramming of funds. Program cut reduced test program/MPLH development/2nd source development for .50 caliber machine gun.

Procurement

Economic: Revised escalation rates.

Quantity: Reduction of aircraft from 578 to 135.
Increase of aircraft from 135 to 195.
Increase of aircraft from 195 to 375.
Decrease in aircraft from 375 to 207.
Increase of aircraft from 207 to 243.
Increase of aircraft from 243 to 255.

Schedule: Program stretched in the FY 86 - 90 POM by Army. Program stretchout into FY 92 due to POM restructuring and SDDM guidance. Budget actions result in schedule change in Kiowa Warrior retrofit program.

Engineering: HQDA directed program changes: Single Channel Ground and Airborne System (SINCGARS), Global Positioning Satellite System (GPS). Inclusion of OIP, ATAS and memory upgrade for the MMS and Control Display System (CDS). Reduction in ATAS, Kiowa Warrior, and configuration changes to the airframe, MMS, CDS due to reduction in quantity. Increase in ATAS, Kiowa Warrior, and configuration changes to the airframe and CDS due to increase in quantity. Inclusion of MPLH. Correction of categorization from Estimating to Engineering due to quantity change. Inclusion of video tape recorder card, additional ANVIS Display Symbology System (ADSS) card. Armament and armament integration for 12 aircraft. Inclusion of engine reliability and maintainability enhancement program.

Estimating: Congressional cuts (IR&D), revised System Program Management (SPM) and Engineering Change Orders (ECO) and adjustments from learning curve differences. Change applicable to decrease from 375 to 207 aircraft. Change applicable to increase from 207 to 243 aircraft. Correction of categorization from Estimating to Engineering due to quantity change. Correction of categorization from Flyaway to Support change due to updated hardware information and adjustments to learning curve. Adjustment for current and prior inflation offset. Estimating changes applicable to increase of 12 aircraft. Definitization of retrofit

13b. (U) Cost Variance Analysis (Cont'd):

contract, contracting strategy change, and refinement of equipment requirements.

Support: Inclusion of Warranty Risk requirement. Increased initial spares estimate based on refined configuration data, changing Logistics Support Analysis (LSA) results. Reduction and additions in initial spares based on changes in program quantities. Inclusion of Kiowa Warrior support equipment and initial spares. Requirement to facilitize depot sooner due to termination of production program. Correction of categorization from Flyaway to Support. Inclusion of total package fielding requirements. Refinement of support requirements for Kiowa Warrior. Congressional action eliminating depot facilitization funds and definitization of support requirements for Kiowa Warrior.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
FY 92 funding provided to continue trainer development (Estimating)	+2.5	+3.8
FY 92 funding provided to continue Multipurpose Light Helicopter development. (Estimating)	+2.6	+3.8
RDT&E Subtotal	+5.1	+7.6
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-23.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+7.9
Total Variance associated with increase of 60 units.	+220.8	+358.4
Quantity Variance associated with increase of 60 airframes. (Quantity)	+55.5	+90.0

13c. (U) **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
Quantity Variance resulting from increase in procurement of MMS/CDS. (Quantity)	+45.4	+73.5
Quantity Variance resulting from increase in procurement of Engine. (Quantity)	+5.7	+9.2
Quantity Variance resulting from increase in procurement of Com/Nav. (Quantity)	+3.3	+5.4
Estimating Variance associated with Quantity increase. (Estimating)	+110.9	+180.3
Support Variance associated with quantity increase of 60 aircraft. (Support)	+8.3	+12.6
Adjustment for Current & Prior Inflation. (Estimating)	+5.4	+10.0
Correct 31 Dec 91 SAR sunk cost to database ($4.2 spares, $8.1 Other Wpn. System). (Estimating)	+6.5	+9.7
Congressional recission. (Estimating)	-8.4	-15.7
Revised program estimate for MWOs and ECPs. (Estimating)	-4.6	-8.9
Definitization of contract mods, refinement of estimates, learning curve adjustments, changes in contracting strategy. (Estimating)	-22.3	-41.3
Adjustment for Current & Prior Inflation. (Support)	+1.0	+1.5
Revised program estimate for Initial Spares. (Support)	-0.6	-2.0

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Definitization of Peculiar Support Equipment for Kiowa Warrior. (Support)	-0.8	-1.5
Sustaining Material Changes. (Support)	+34.5	+58.5
Procurement Subtotal	+239.8	+366.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4.380	-1.025	1.292	0.590	2.385	1.174	--	0.011	4.427	8.807

15. (U) Contract Information (Then-Year Dollars in Millions):

Contracts DAAJ09-90-C-0352 and DAAJ09-90-C-0353 have passed the 90% delivered mark and were omitted from the list of large active contracts. They no longer meet the SAR reporting criteria per DODI 5000.2.

a.(U) RDT&E --

(U) ARMED RETROFIT:	Initial Contract Price Target	Ceiling	Qty
BELL HELICOPTER, DALLAS/FT WORTH, TX DAAJ09-92-C-0055, FFP Award: N/A Definitized: January 16, 1992	$44.7	$0.0	28

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$44.7	$0.0	28	$44.7	$44.7

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

b.(U) Procurement --

(U) 9TH PRODUCTION BUY:	Initial Contract Price Target	Ceiling	Qty
BELL HELICOPTER, DALLAS/FT WORTH, TX DAAJ09-92-C-0502, FFP Award: April 30, 1992 Definitized: July 31, 1992	$96.2	$0.0	36

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$96.2	$0.0	36	$96.2	$96.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) 9TH PRODUCTION MMS:	Initial Contract Price Target	Ceiling	Qty
MCDONNELL DOUGLAS, HUNTINGTON BEACH, CA DAAJ09-92-C-0512, FFP Award: May 30, 1992 Definitized: September 29, 1992	$65.6	$0.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$65.6	$0.0	0	$65.6	$65.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 77.8% (14 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 87.2% ($2418.9 / $2774.2)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY80-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-97)	Total
RDT&E	261.8	-	-	-	261.8
Procurement	2157.1	147.8	123.6	83.9	2512.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2418.9	147.8	123.6	83.9	2774.2

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY82 Dollars Nonrec	Flyaway FY82 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army								
1980			8.4	8.4	7.4	7.4	7.4	10.8
1981			26.5	26.5	25.6	25.6	25.6	10.6
1982			37.4	37.4	38.5	38.5	38.5	7.6
1983			68.8	68.8	73.9	73.9	73.9	4.9
1984			45.3	45.3	50.4	50.4	50.4	3.8
1985			17.7	17.7	20.3	20.3	20.3	3.4
1986			6.1	6.1	7.2	7.2	7.2	2.8
1987								
1988								

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars Nonrec	Flyaway FY82 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1989								
1990								
1991			15.3	15.3	21.6	21.6	20.5	4.3
1992			6.3	6.3	9.2	9.1	6.8	2.8
1993			5.1	5.2	7.7	0.2		2.4
Subtot			236.9	237.0	261.8	254.2	250.6	
Appropriation: 2031 Aircraft Procurement, Army								
1983		2.4		31.8	38.3	38.3	38.3	9.0
1984	16	17.4	136.5	161.3	199.5	199.5	199.5	8.0
1985	44		141.5	183.1	233.5	233.5	233.5	3.4
1986	39		122.4	175.0	230.7	230.7	230.7	2.8
1987	36		102.8	133.0	179.3	179.3	179.3	2.7
1988	36		106.8	116.4	164.2	164.2	156.2	3.0
1989	36		135.5	156.4	229.6	229.6	229.6	4.2
1990	36		118.2	126.2	191.3	191.3	191.3	4.0
1991			4.1	9.8	15.3	14.7	11.8	4.3
1992	36		192.6	219.2	350.4	273.6	205.2	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars Nonrec	Flyaway FY82 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2031 Aircraft Procurement, Army (Cont'd)								
1993	36		182.6	198.6	325.0	4.9	0.5	2.4
1994			75.0	88.3	147.8			2.4
1995			51.5	72.2	123.6			2.3
1996			8.7	27.3	47.8			2.3
1997			7.4	20.2	36.1			2.2
Subtot	315	19.8	1385.6	1718.8	2512.4	1759.6	1675.9	
Grand Total	315	19.8	1622.5	1955.8	2774.2	2013.8	1926.5	

Program funds are shown only through FY 97 because funds beyond FY 97 are for field modifications.

Recurring Flyaway Dollars in FY 91 and FY 94 through 97 are for hardware for the Kiowa Warrior Retrofit Program.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The Army Helicopter Improvement Program (AHIP) ASARC Milestone Decision Review III, dated 26 July 1985, approved the decision for Low Rate Initial Production of 16 aircraft and full production of 562 AHIP aircraft during the period FY 85 through FY 91. The approved funding profile ramped up to 120 aircraft per year.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	147.8	0.0	-147.8	-147.8
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	123.6	0.0	-123.6	-123.6
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	83.9	0.0	-83.9	-83.9

The current budget contains no production after FY 93. Funds in FY 94 and FY 95 are for the retrofit of aircraft to the Kiowa Warrior configuration.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	5/5
Procurement	243/243

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 578 - @ Peak Rate: 10.0/mo			
FY 82 Base-Year $	1.990	4.460	4.600
Then Year $	3.190	6.530	5.520
@ Qty 116 (1st three years) - @ Peak Rate: 10.0/mo			
FY 82 Base-Year $	2.800	4.240	5.290
Then Year $	3.820	5.400	6.100

Note: Current Estimate is costed at 4 per month.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Sustainment costs are based on 240 Kiowa Warriors operating at a tempo of 240 peacetime flying hours per year with each aircraft operating for 20 years. Replenishment costs include aircraft spares and repair parts. Depot maintenance includes the cost of labor, material and transportation for maintenance performed at the depot level. The only Military Personnel Cost included is System Project Management. Sustainment Costs are based on the Armed AHIP Baseline Cost Estimate (BCE) of September 1990. The antecedent system for the Kiowa Warrior is the OH-58A.

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Flying Hour (Kiowa Warrior)	Avg Annual Cost Per Flying Hour (Antecedent)
Replenishment	1196.0	N/A
Petroleum, Oil & Lub	17.0	N/A
Ammunition	468.0	N/A
Depot Maintenance	64.0	N/A
Field Maintenance, Civ	53.0	N/A
Transportation	3.0	N/A
System Specific Repl Trn	179.0	N/A
Military Personnel	11.0	N/A
System Project Mgmt, Civ	16.0	N/A
Modification Kits	197.0	N/A
Life Cycle Software Supp	4.0	N/A
Total	2208.0	N/A

Data for the antecedent system (OH-58A) is not available.

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	49.3	2.4	1.2	---	52.9
Total	49.3	2.4	1.2	---	52.9

N-41 TRIDENT II S4B

~~CONFIDENTIAL~~

92-071

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: TRIDENT II SUBMARINE

AS OF DATE: December 31, 1992

INDEX

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1. (U) Designation and Nomenclature (Preferred Name):
OHIO Class Submarine

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
STRATEGIC SYSTEMS PROGRAMS
DEPARTMENT OF THE NAVY
WASHINGTON, DC 20376-5002
RADM JOHN T. MITCHELL
Assigned: April 26, 1991
AV 327-0456 COMM (703) 607-0453

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604363N Project J1546
PE 0606371N Project J1546
PROCUREMENT:
APPN 1611 ICN 01 01 1040 (Navy)

No Security Objection to Open Publication
(AS AMENDED)
93-C-0409
MAY 25 1993
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Naval Operations Dept. of the Navy

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DEPARTMENT OF DEFENSE

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5. (U) Related Programs:
TRIDENT I Backfit and TRIDENT II (D-5) Missile, TRIDENT I Systems, SSN 21 (SEAWOLF), and SSN 688 Class Program.

6. (U) Mission and Description:
To provide an undersea strategic missile system to insure that the U.S. continues to maintain a credible, survivable deterrent independent of foreseeable threats. The nuclear-powered OHIO Class D-5 Capable Submarine has 24 missile tubes. Incorporation of state-of-the-art technologies in submarine quietness, mobility, and self-defense make the submarine highly survivable. The submarine can patrol, transit, or evade enemy search forces at higher speeds than previous SSBN's. It has an integrated radio room designed to enhance the survivability of communication links in a hostile electromagnetic environment, and carries the latest submarine defense systems.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The Deputy Secretary of Defense's Program Decision Memorandum (PDM) of 2 October 1981 directed the Navy to fund development of the TRIDENT II (D-5) missile with a December 1989 IOC. The design characteristics of the TRIDENT II (D-5) missile required modifications to the OHIO Class Submarine. Efforts in FY 1982 included identification of the necessary subsystem changes to incorporate the TRIDENT II (D-5) missile in the OHIO Class Submarine baseline. Required weapon support system and component developments were initiated.

On 29 April 1982, SECNAV maintained the December 1989 IOC for TRIDENT II (D-5), while rephasing the introduction of the weapon system into the fleet. A decision was made to incorporate the D-5 Strategic Weapon System (SWS) starting with the ninth submarine (SSBN 734). The D-5 capability would be accomplished during initial construction of the ship, consequently the ninth ship delivery was extended one year. The schedules of the tenth (SSBN 735) and the eleventh (SSBN 736) were also extended. The twelfth (SSBN 737) and the subsequent ship construction periods were not affected by the change to TRIDENT II (D-5). On 1 June 1982 the SECDEF advised Congress of the decision to accelerate the rate of introduction of D-5 while maintaining the 1989 IOC.

In November 1982, the Navy executed modifications to the Electric Boat contract which incorporated the D-5 SWS into the SSBN 734 and SSBN 735 and revised their delivery dates to December 1988 and August 1989 respectively. On 21 November 1983 an option to acquire the SSBN 736 was exercised. A contemporaneous modification to incorporate D-5 and extend delivery to April 1990 was also executed. The contract for the SSBN 737 was awarded in August 1985. In March 1986 an option for the SSBN 738 was awarded. In May 1987 the

7a. (U) Program Highlights (Cont'd):

SSBN 739 was awarded to Electric Boat. In January 1988 the SSBN 740 was competitively awarded to Electric Boat. In October 1988 an option for the SSBN 741 was awarded. In October 1989 an option for the SSBN 742 was awarded. In December 1990 the SSBN 743 (the eighteenth and final SSBN TRIDENT OHIO Class Submarine) was awarded to Electric Boat.

The SSBN 734 delivered in November 1988 and deployed in March 1990. The SSBN 735 deployed in October 1990 and the SSBN 736 deployed in September 1991. The SSBN 737 was delivered in June 1991. The SSBN 738 achieved Initial Criticality in late November and completed Power Range Testing in December 1991.

b. (U) Significant Developments Since Last Report --
The SSBN 737 conducted its Post Shakedown Availability (PSA) from February to May 1992 and deployed for its first Deterrent Patrol in June 1992. The SSBN 738 delivered and was commissioned in June 1992. The SSBN 739 "Floated Off" in April 1992 and the Ceremonial Launch occurred in August 1992.

The Electric Boat Division has accelerated the Target Delivery Dates for SSBN 739 (03 July 1993 vice 31 August 1993) and SSBN 740 (01 July 1994 vice 31 August 1994).

The Ohio Class D-5 Capable Submarine is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are no threshold breaches to the Acquisition Program Baseline of December 31, 1988 and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
Complete Baseline Design	MAR 72	MAR 72	MAR 72
Characteristics Approved	JAN 73	JAN 73	JAN 73
Complete Ship Contract Design	AUG 84	AUG 84	AUG 84
Production Contract Award	JAN 82	JAN 82	JAN 82
Construction Started:			
First Ship	JAN 82	JAN 82	JAN 82

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Last Ship	JAN 88	JUN 92	DEC 90
Delivery:			
First Ship	DEC 88	DEC 88	NOV 88
Last Ship	DEC 93	APR 98	AUG 97
System IOC	DEC 89	DEC 89	MAR 90
Launch:			
First Ship	NOV 86	N/A	DEC 86
Last Ship	JUL 92	N/A	JUL 96
Acceptance Trials:			
First Ship	DEC 88	N/A	NOV 88
Last Ship	DEC 93	N/A	AUG 97

b. (U) Previous Change Explanations --

The start of construction, launch, acceptance trials, and delivery for the last ship was revised to reflect an increased number of submarines for the total program. Production Estimate included a total program of seven submarines.

The acceptance trials and delivery of the first ship was revised to reflect the completion of those milestones.

The system IOC was revised to reflect delays in the TRIDENT II (D-5) Missile.

The start of construction, launch, acceptance trials, and delivery for the last ship was revised in the December 31, 1990 SAR to reflect a total program of ten submarines vice thirteen in the December 31, 1989 SAR.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
USD(R&E) Memo of July 22, 1981, subject OHIO Class Submarine Program.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 31 December 1988.

TRIDENT II SUBMARINE, December 31, 1992

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length Overall (ft)	558	560	/ 560	560	560
Beam Max. (hull dia. in feet)	42	42	/ 42	42	42
Draft Navigation-ft	35.5	36.5	/ 36.5	36.5	36.5
Submerged Displacement (Tons)	18500	18700	/ 18700	18700	18700

(b)(1)

[redacted]

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
USD(R&E) Memo of July 22, 1981, subject OHIO Class Submarine Program.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 31 December 1988.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	49.3	62.1	64.2
Procurement	9980.0	14471.5	12109.7
Sailaway	(9743.3)		(11929.6)
Other Weapon System	(236.7)		(180.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	519.6	424.6	424.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year $	10548.9	14958.2	12597.9
Escalation	3536.3	2925.1	1700.5
Development (RDT&E)	(3.6)	(4.6)	(5.8)
Procurement	(3416.8)	(2845.9)	(1619.5)
Construction (MILCON)	(115.9)	(74.6)	(75.2)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	14085.2	17883.3	14298.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	7	13	10
Total	7	13	10

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs --
The Current Estimate for Procurement includes $1,410.3 (Then Year $ in millions) for Nuclear Propulsion costs.

e. (U) References --

(U) Production Estimate:
USD(R&E) Memo of July 22, 1981, subject OHIO Class Submarine Program.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 31 December 1988.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary**:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	14298.4	14302.5	14298.4
(2) Quantity	10	10	10
(3) Unit Cost	1429.84	1430.25	1429.84
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	11.0	11.0	23.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	11.0	11.0	23.7
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

FY 1993 and FY 1994 requests include only Outfitting/Post Delivery.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	52.9	13396.8	635.5	14085.2
Previous Changes:				
Economic	-3.0	-2957.2	-40.7	-3000.9
Quantity	-	+6288.6	-	+6288.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+20.2	-2878.2	-95.6	-2953.6
Other	-	-	-	-
Support	-	-116.8	-	-116.8
Subtotal	+17.2	+336.4	-136.3	+217.3
Current Changes:				
Economic	-0.1	-110.8	-	-110.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+103.3	-	+103.3
Other	-	-	-	-
Support	-	+3.5	-	+3.5
Subtotal	-0.1	-4.0	-	-4.1
Total Changes	+17.1	+332.4	-136.3	+213.2
Current Estimate	70.0	13729.2	499.2	14298.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	49.3	9980.0	519.6	10548.9
Previous Changes:				
Quantity	-	+4367.2	-	+4367.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+15.0	-2264.3	-95.6	-2344.9
Other	-	-	-	-
Support	-	-61.4	-	-61.4
Subtotal	+15.0	+2041.5	-95.6	+1960.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	+83.4	-	+83.3
Other	-	-	-	-
Support	-	+4.8	-	+4.8
Subtotal	-0.1	+88.2	-	+88.1
Total Changes	+14.9	+2129.7	-95.6	+2049.0
Current Estimate	64.2	12109.7	424.0	12597.9

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Estimating: Transfer of certain efforts properly identified with D-5 capable SSBNs from the TRIDENT I program, reallocation of funds to TRIDENT II (D-5) Missile and increased estimates for completion of development efforts.

Procurement
Economic: Revised escalation indices.
Quantity: Six additional submarines through December 1989 SAR. Deletion of three submarines in December 1990 SAR.

13b. (U) Cost Variance Analysis (Cont'd):

Estimating: Revised estimates for shipbuilding and GFE costs, estimating changes applicable to deletion of three SSBNs from the program, and correction to sailaway costs in prior SARs.

Support: Correction to reconcile sailaway and support costs in prior SARs.

MILCON

Economic: Revised escalation indices.

Estimating: Revised construction estimates for Kings Bay.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current and prior years escalation. (Estimating)	-0.1	N/A
RDT&E Subtotal	-0.1	-0.1
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-110.8
Adjustment for current and prior years escalation. (Estimating)	+90.3	+110.7
Revised estimates based on latest contract experience. (Estimating)	-6.9	-7.4
Revised estimates. (Support)	+4.8	+3.5
Procurement Subtotal	+88.2	-4.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2012.2	-311.2	25.2	--	--	-285.0	--	-11.3	-582.3	1429.8

For the OHIO Class D-5 Capable Submarine Program, the initial SAR estimate is the Current Baseline Estimate.

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) SUBMARINE GROUP VI SHIPS:	Initial Contract Price Target	Ceiling	Qty
GENERAL DYNAMICS, GROTON, CT N00024-87-C-2023, FPIF Award: May 26, 1987 Definitized: May 26, 1987	$611.9	$693.9	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$634.6	$719.6	1	$632.3	$633.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-8.0	$0.4
Cumulative Variances To Date (12/26/92)	$5.8	$12.5
Net Change	$13.8	$12.1

Explanation of Change:

The net cost and schedule variances are not significant in relation to the current contract target price and should not affect future program cost and schedule. Program Manager's estimate at completion remains within the Program Manager's budget.

(U) SUBMARINE GROUP VII SHIP:	Initial Contract Price Target	Ceiling	Qty
GENERAL DYNAMICS, GROTON, CT N00024-88-C-2000, FPIF Award: January 5, 1988 Definitized: January 5, 1988	$1837.9	$2077.6	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1894.2	$2141.6	3	$1929.3	$1949.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-33.7	$-13.3
Cumulative Variances To Date (12/26/92)	$-12.8	$-4.7
Net Change	$20.9	$8.6

Explanation of Change:

The net cost and schedule variances are not significant in relation to the current contract target price and should not affect future program cost and schedule. Program Manager's estimate at completion remains within the Program Manager's budget.

15. (U) Contract Information (Cont'd):

(U) SUBMARINE (NUCLEAR):
GENERAL ELECTRIC, SCHENECTADY, NY
N00024-85-C-4011, CPFF
Award: December 3, 1984
Definitized: December 3, 1984

Initial Contract Price		
Target	Ceiling	Qty
$197.5	$0.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$186.0	$0.0	0	$186.0	$186.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/26/92)	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

Under Naval Nuclear Propulsion Program prime contracts about 90 percent of the contract value is subcontracted in fixed price type subcontracts. Because control of prime contract cost and measurement of planned vs. actual cost is exercised through detailed government and prime contractor surveillance of subcontract obligations the Navy has waived contract cost and schedule control system criteria requirements for Naval Nuclear Propulsion Program procurements. If excess funds are determined to be available, they are returned to the program for further use. Program Manager's estimate at completion remains within approved budget.

(U) NUCLEAR PROPULSION:
DEPT OF ENERGY, GERMANTOWN, MD
N00024-67-F-5110, EAO
Award: July 1, 1977
Definitized: July 1, 1977

Initial Contract Price		
Target	Ceiling	Qty
$442.7	$0.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$586.7	$0.0	0	$586.7	$586.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/26/92)	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

15. (U) Contract Information (Cont'd):

See above.

(U) SUBMARINE GROUP VIII SHP:	Initial Contract Price Target	Ceiling	Qty
General Dynamics, Groton, CT N00024-91-C-2120, FPIF Award: December 19, 1990 Definitized: December 19, 1990	$765.0	$876.0	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$767.0	$878.2	1	$789.6	$813.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.9	$2.2
Cumulative Variances To Date (12/26/92)	$-14.7	$-5.2
Net Change	$-15.6	$-7.4

Explanation of Change:

The net cost and schedule variances are not significant in relation to the current contract target price and should not affect future program cost and schedule. Program Manager's estimate at completion is within the Program Manager's budget.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 72.2% (13 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 99.5% ($14230.5 / $14298.4)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-98)	Total
RDT&E	68.2	0.9	0.9	-	70.0
Procurement	13663.1	23.7	18.1	24.3	13729.2
MILCON	499.2	-	-	-	499.2
O&M	-	-	-	-	-
Total	14230.5	24.6	19.0	24.3	14298.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1982				24.6	24.6	24.6	24.6	7.6
1983								4.9
1984				9.0	9.5	9.5	9.5	3.8
1985				8.6	9.4	9.4	8.9	3.4
1986				7.8	8.8	8.8	8.6	2.8
1987				5.0	5.8	5.8	5.3	2.7
1988				5.0	6.0	6.0	6.0	3.0
1989				0.6	0.8	0.8	0.8	4.2
1990				0.6	0.8	0.8	0.8	4.0

16c. (U) **Program Funding Summary (Cont'd)**:

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1991				0.4	0.5	0.5	0.5	4.3
1992				0.7	1.0	1.0	0.8	2.8
1993				0.7	1.0	0.9		2.4
1994				0.6	0.9			2.4
1995				0.6	0.9			2.3
Subtot				64.2	70.0	68.1	65.8	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1981	1		1359.9	1435.9	1463.6	1430.0	1375.3	9.6
1982				317.9	333.5	333.5	332.6	7.5
1983	1		1354.2	1172.6	1249.4	1234.9	1204.6	3.8
1984	1		1229.1	1443.8	1566.4	1565.2	1487.7	3.6
1985	1		1200.0	1180.0	1303.4	1294.5	1256.3	2.1
1986	1		1135.1	1042.3	1175.4	1161.5	1095.7	1.1
1987	1		1152.5	1126.7	1295.4	1262.0	1071.2	1.5
1988	1		1129.4	1126.1	1324.8	1227.8	949.7	2.3
1989	1		1107.3	1106.5	1330.1	1222.0	811.1	2.8
1990	1		1096.1	971.2	1191.5	989.5	487.9	1.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1991	1		1166.0	1070.1	1341.6	1122.8	246.6	1.3
1992				60.1	77.0	55.4	5.9	1.7
1993				8.4	11.0			2.4
1994				17.7	23.7			2.4
1995				13.2	18.1			2.3
1996				9.1	12.7			2.3
1997				7.3	10.5			2.2
1998				0.8	1.1			2.2
Subtot	10		11929.6	12109.7	13729.2	12899.1	10324.6	
Appropriation: 1205 Military Construction, Navy								
1982				12.8	13.0	13.0	13.0	7.6
1983				14.0	14.8	14.8	14.8	4.9
1984				15.6	17.0	17.0	17.0	3.8
1985				85.6	96.1	96.1	96.1	3.4
1986				79.4	91.8	91.8	91.8	2.8
1987				109.7	131.1	131.1	131.1	2.7
1988				59.6	73.8	73.8	70.0	3.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1205 Military Construction, Navy (Cont'd)								
1989				28.5	36.7	32.5	27.7	4.2
1990				18.8	24.9	18.9	18.9	4.0
Subtot				424.0	499.2	489.0	480.4	
Grand Total	10		11929.6	12597.9	14298.4	13456.2	10870.8	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Not required for programs that produce at a rate less than six per year.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		23.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		18.1		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		24.3		N/A	N/A

17b. (U) Production Rate Data (Cont'd):
Not required for programs that produce at a rate less than six per year.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	5/5

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The source of the costs displayed is the FY 1994 President's Budget. Repair cost element includes maintenance material cost and civilian and military salaries at the TRIDENT Refit Facilities for one TRIDENT hull. Manpower cost element includes cost for two submarine crews. Each crew contains 15 Officers and 148 Enlisted personnel.

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Submarine	Avg Annual Cost Per
Repair	9.4	N/A
OPTAR	1.0	N/A
Manpower	7.8	N/A
Total	18.2	N/A

c. (U) Contractor Support Costs -- None.

FORMERLY RESTRICTED DATA
SECRET FORMERLY RESTRICTED DATA
SECRET

N-40:
TRIDENT II MSL

93-070

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: TRIDENT II MISSILE

AS OF DATE: December 31, 1992

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MAY 25 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Sea Launched Ballistic Missile-UGM 133A TRIDENT II (D-5) Missile

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
STRATEGIC SYSTEMS PROGRAMS
DEPARTMENT OF THE NAVY
WASHINGTON, DC 20376-5002
RADM JOHN T. MITCHELL
Assigned: April 26, 1991
AV 327-0456 COMM (703) 607-0453

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603371N Project J0951
PE 0604363N Project J0951
PROCUREMENT:
APPN 1507 ICN 1150 (Navy)

No Security Objection to Open Publication
(AS AMENDED)
93-C-0410
MAY 25 1993
Office of the Chief of
Naval Operations Dept. of the Navy

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5. (U) Related Programs:
TRIDENT Submarine System, TRIDENT I (C-4) Missile Systems, Fleet Ballistic Missile System, and DOE Re-Entry Vehicle Development.

6. (U) Mission and Description:
The TRIDENT II (D-5) Strategic Weapons System program developed an improved Sea Launched Ballistic Missile (SLBM) with greater accuracy and payload capability at equivalent ranges as compared to the TRIDENT I (C-4) system. TRIDENT II enhances U.S. strategic deterrence by providing a survivable sea-based system capable of engaging the full spectrum of potential targets. It enhances the U.S. position in strategic arms negotiation by providing a weapon system with performance and payload flexibility that accommodates various treaty initiatives. TRIDENT II's increased payload allows the deterrent mission to be achieved with fewer submarines.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In March 1980 the Secretary of Defense described to Congress a Sea Launched Ballistic Missile Modernization Advanced Development Program leading to an end of FY 1983 Defense System Acquisition Review Council Milestone II decision to select a weapon system option which would achieve specific performance objectives with an IOC of CY 1989. The Secretary of Defense reaffirmed the need for an improved Sea Launched Ballistic Missile in his Decision Memorandum of 2 February 1981. The Deputy Secretary of Defense in his Program Decision Memorandum of 2 October 1981, directed the Navy to fund the development of a new higher yield Re-Entry Body for the TRIDENT II (D-5) Missile. The Deputy Secretary of Defense in his memorandum of 28 October 1983, authorized the Navy to proceed to full scale Engineering Development of the TRIDENT II (D-5) SWS and initial production, as necessary, to meet a December 1989 IOC. All major D-5 weapon system subsystem completion development contracts were awarded as of March 1984. The flight testing from the flat pad at Cape Canaveral was completed in January 1989. Fifteen flight tests were fully successful, one flight (the seventh) was a partial success, two flights (the ninth and the thirteenth) failed to meet test objectives, and one flight (the fifteenth) was terminated by the range safety officer and is a "no test." The first TRIDENT II (D-5) Performance Evaluation Missile (PEM) was launched from the SSBN 734 (USS TENNESSEE) on 21 March 1989. The missile experienced loss of control just after first stage (F/S) ignition and was subsequently auto-destructed by the onboard flight termination system (FTS).

The second PEM launched on 2 August 1989 was fully successful. The third PEM was launched on 15 August 1989 and experienced a control loss early in first stage flight. though all hardware that had been modified as a result of the first failure performed satisfactorily. PEM flight tests resumed in December 1989; six fully successful tests

7a. (U) Program Highlights (Cont'd):

were conducted and the PEM flight test program completed in February 1990.

Three TRIDENT II (D-5) submarines have completed strategic loadout and have deployed; the SSBN 734 in March 1990, the SSBN 735 in October 1990, and the SSBN 736 in September 1991.

b. (U) Significant Developments Since Last Report --
The USS KENTUCKY (SSBN 737) completed strategic loadout and deployed on 02 June 1992. The USS MARYLAND (SSBN 738) delivered on 05 June 1992 and is scheduled for strategic loadout and deployment in the third quarter of FY 1993. The SSBN 738 successfully completed both Demonstration and Shakedown Operations on 19 July 1992 and 19 October 1992 respectively.

In language accompanying the FY 1993 Department of Defense Appropriations Bill, the Secretary of Defense was directed to conduct an independent study of the TRIDENT missile system and to submit to the Congressional defense committee by 1 July 1993 the results of the study as well as recommendations. Included in areas to be addressed by the study are the merits and costs of D-5 Backfit of the 8 TRIDENT I (C-4) SSBNs vs. continuation as TRIDENT I. The Navy's FY 1994 and outyear budget request assumes, but does not fund, a subsequent decision to either conduct a D-5 Backfit or invest in a TRIDENT I continuation program.

The TRIDENT II (D-5) Missile is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
The estimates included in this report support the FY 1994 President's Budget which has deferred the decision on D-5 Backfit of the eight Pacific TRIDENT I (C-4) SSBNs to the FY 1996 Budget submission. The annual missile quantities have been reduced from 48 per year to 24 per year. The current estimates also represent a significant reduction in the flight test program. These decisions have reduced the procurement objective to 428 for the outload of ten TRIDENT II submarines compared to 779 for eighteen submarines in the last report. This report includes the removal of MILCON funding to establish TRIDENT II missile processing capability at the Strategic Weapons Facility, Bangor, WA.

8. (U) Threshold Breaches:
There are no breaches to the Acquisition Program Baseline of 28 April 1993. The lower procurement objective and the annual procurement rate change causes a Nunn-McCurdy Program Acquisition Unit Cost (PAUC) breach in excess of 15%. This unit cost increase is

8. (U) Threshold Breaches (Cont'd):

due to the allocation of fixed development, procurement and construction costs over a smaller quantity of missiles. Additional information on the Nunn-McCurdy PAUC breach is provided in section 12.

9. (U) Schedule:

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
Milestone I (Initiate Concept Definition)	OCT 77	OCT 77	OCT 77
Commence Advanced Dev Phase	OCT 80	OCT 80	OCT 80
Milestone II (Commence FSD)	OCT 83	OCT 83	OCT 83
First Development Flight Test	JAN 87	JAN 87	JAN 87
Milestone III (Production Approval)/ Award Initial Missile Production Contract	APR 87	APR 87	APR 87
IOC (may be less than full msl outload)	DEC 89	DEC 89	MAR 90

b. (U) Previous Change Explanations --

The initial missile production contract was awarded April 8, 1987 (Milestone III A).

The first DASO and the IOC were delayed due to scheduled corrective action for the PEM failures and as a result of destruction of the Hercules Propellant Mix Building #2, used for casting second-stage missile motors. IOC was achieved with full missile outload.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
UNSECDEF Memorandum for SECNAV of June 4, 1987, subject TRIDENT II (D-5) Missile Program.
UNSECNAV Memorandum for DIRSSP of December 1, 1987, subject TRIDENT (D-5) Navy Program Review.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 28 April 1993.

TRIDENT II MISSILE, December 31, 1992

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

(U) Production Estimate:
UNSECDEF Memorandum for SECNAV of June 4, 1987, subject TRIDENT II (D-5) Missile Program.
UNSECNAV Memorandum for DIRSSP of December 1, 1987, subject TRIDENT (D-5) Navy Program Review.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 28 April 1993.

TRIDENT II MISSILE, December 31, 1992

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	8434.9	8420.5	8420.5
Procurement	17588.5	11421.5	11421.5
Flyaway	(14471.2)		(8363.3)
Other weapon systems	(3082.9)		(3014.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(43.3)
Construction (MILCON)	532.9	363.2	363.2
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year $	26556.3	20205.2	20205.2
Escalation	8962.2	6085.6	6085.6
Development (RDT&E)	(1018.3)	(998.9)	(998.9)
Procurement	(7808.4)	(5020.1)	(5020.1)
Construction (MILCON)	(135.5)	(66.6)	(66.6)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	35518.5	26290.8	26290.8
b. (U) Quantity --			
Development (RDT&E)	30	28	28
Procurement	815	428	428
Total	845	456	456

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

(b)(1)

e. (U) References --

(U) Production Estimate:
UNSECDEF Memorandum for SECNAV of June 4, 1987, subject TRIDENT II (D-5) Missile Program.
UNSECNAV Memorandum for DIRSSP of December 1, 1987, subject TRIDENT (D-5) Navy Program Review.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 28 April 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	26290.8	36786.7	26290.8
(2) Quantity	456	807	456
(3) Unit Cost	57.655	45.585	57.655
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	983.5	983.5	1132.0
Less CY Adv Proc	223.0	223.0	141.0
Plus PY Adv Proc	114.8	114.8	143.0
Net Total	875.3	875.3	1134.0
(2) Quantity	21	21	24
(3) Unit Cost	41.681	41.681	47.250

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY83$)	20205.2	25495.3	20205.2
(2) Unit Cost	44.310	31.593	44.310
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY83$)	654.3	654.3	736.1
Less CY Adv Proc	148.4	148.4	91.7
Plus PY Adv Proc	76.4	76.4	93.0
Net Total	582.3	582.3	737.4
(2) Unit Cost	27.729	27.729	30.725

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	12.070	26.48
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-351	-43.49
(4) PAUC (BY83$)	12.717	40.25
(5) CPUC (BY83$)	0.000	N/A

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. (U) Changes from the Previous SAR - (??? ?? SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.000	0.00
(2) CPUC (TY$)	0.000	0.00
(3) PAUC Quantity	0	0.00
(4) PAUC (BY83$)	0.000	0.00
(5) CPUC (BY83$)	0.000	0.00

g. (U) Initial SAR (DEC 82)
(1) Program Acquisition Cost (TY$) -- 50.9
(2) Program Acquisition Cost (BY$) -- 32.8

h. (U) Unit Cost Changes.

(1) (U) PAUC --

The lower procurement objective and the annual procurement rate change caused a Nunn-McCurdy Program Acquisition Unit Cost (PAUC) breach in excess of 15%. The increase is due to the allocation of fixed development, procurement and construction costs over a smaller quantity of missiles.

(2) (U) CPUC -- None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost. - None.

j. (U) Program Management and Control.

RADM JOHN T. MITCHELL; DIRECTOR, STRATEGIC SYSTEMS PROGRAMS

k. (U) Cost Control Actions. - None.

l. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): LOCKHEED
(2) Contract Title: MISSILE FOLLOW-ON PROD.
(3) Contract Number:N00030-89-C-0089
(4) Actual Cost of Work Performed (ACWP) to date: 834.5
(5) Percent contract completed (BCWP/target cost): 98.00

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-6.7/-0.85%	$-15.0/-1.86%
Previous SAR	N/A	N/A
Current values	$+6.2/+0.74%	$-6.7/-0.79%
Change from the baseline SAR	$+12.9/+1.59%	$+8.3/+1.07%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

All deliveries have been completed on this contract. This is the final report.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): LOCKHEED
(2) Contract Title: MISSILE FOLLOW-ON PROD
(3) Contract Number:N00030-90-C-0090
(4) Actual Cost of Work Performed (ACWP) to date: 797.1
(5) Percent contract completed (BCWP/target cost): 98.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-14.0/-3.21%	$-24.6/-5.34%
Previous SAR	N/A	N/A
Current values	$-17.6/-2.26%	$-8.3/-1.05%
Change from the baseline SAR	$-3.6/+0.95%	$+16.3/+4.29%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

The unfavorable cost variance is the result of greater than planned overhead rates driven by an erosion of some previously planned business base.

The schedule variance is primarily driven by deliveries occurring later than planned for subcontracted effort, namely re-entry hardware, second stage nozzles, and rocket motor sets. There is no impact on scheduled outloads.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

(U) (1) Contractor(s): LOCKHEED
(2) Contract Title: MISSILE FOLLOW-ON PROD.
(3) Contract Number:N00030-92-C-0092
(4) Actual Cost of Work Performed (ACWP) to date: 448.4
(5) Percent contract completed (BCWP/target cost): 40.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A	N/A
Previous SAR	N/A	N/A
Current values	$-1.3/-0.29%	$+3.8/+0.86%
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

The cost variance is insignificant.

The contract is essentially on schedule.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): Lockheed
(2) Contract Title: MISSILE FOLLOW-ON PROD
(3) Contract Number:N00030-91-C-0091
(4) Actual Cost of Work Performed (ACWP) to date: 816.6
(5) Percent contract completed (BCWP/target cost): 79.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-4.0/-1.11%	$+1.7/+0.47%
Previous SAR	N/A	N/A
Current values	$-6.1/-0.75%	$-3.5/-0.43%
Change from the baseline SAR	$-2.1/+0.36%	$-5.2/-0.90%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

The unfavorable cost variance is driven by the difference between the initial negotiated rates and current rates being experienced in Sunnyvale production effort.

The unfavorable schedule variance is due to subcontracted hardware not delivered as planned. No schedule impacts are foreseen at this time.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): RAYTHEON COMPANY
(2) Contract Title: GUIDANCE PIECE PART PROD
(3) Contract Number:N00030-91-C-0064
(4) Actual Cost of Work Performed (ACWP) to date: 94.1
(5) Percent contract completed (BCWP/target cost): 85.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A	N/A
Previous SAR	N/A	N/A
Current values	$-0.7/-0.75%	$-0.7/-0.74%
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

Eighty-five percent of the contracted effort is now complete and the cost and schedule variances are insignificant.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): LOCKHEED
(2) Contract Title: MISSILE FOLLOW-ON PROD
(3) Contract Number:N00030-93-C-0093
(4) Actual Cost of Work Performed (ACWP) to date: 9.3
(5) Percent contract completed (BCWP/target cost): 1.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A	N/A
Previous SAR	N/A	N/A
Current values	$+0.2/+2.11%	$-0.2/-2.06%
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

An insufficient amount of data exists to allow for meaningful analysis.

The contract is essentially on schedule.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	9453.2	25396.9	668.4	35518.5
Previous Changes:				
Economic	-22.1	+1559.2	+4.6	+1541.7
Quantity	-48.0	-1480.5	-	-1528.5
Schedule	-	+1388.9	+25.6	+1414.5
Engineering	-	-	-	-
Estimating	+36.3	-590.3	-37.3	-591.3
Other	-	-	-	-
Support	-	+431.8	-	+431.8
Subtotal	-33.8	+1309.1	-7.1	+1268.2
Current Changes:				
Economic	+0.3	-1275.0	-15.2	-1289.9
Quantity	-	-10490.7	-	-10490.7
Schedule	-	+1350.5	-	+1350.5
Engineering	-	-	-	-
Estimating	-0.3	+471.2	-216.3	+254.6
Other	-	-	-	-
Support	-	-320.4	-	-320.4
Subtotal	-	-10264.4	-231.5	-10495.9
Total Changes	-33.8	-8955.3	-238.6	-9227.7
Current Estimate	9419.4	16441.6	429.8	26290.8

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-501.6	-	-541.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+25.8	-602.2	-38.6	-615.0
Other	-	-	-	-
Support	-	+95.6	-	+95.6
Subtotal	-14.2	-1008.2	-38.6	-1061.0
Current Changes:				
Quantity	-	-5206.4	-	-5206.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.2	+202.3	-131.1	+71.0
Other	-	-	-	-
Support	-	-154.7	-	-154.7
Subtotal	-0.2	-5158.8	-131.1	-5290.1
Total Changes	-14.4	-6167.0	-169.7	-6351.1
Current Estimate	8420.5	11421.5	363.2	20205.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Deleted two development flight test missiles.

Estimating: Reclassification of costs as escalation for current and prior years. Adjustment to prior years and reallocation of funds from TRIDENT II Submarine. Congressional reductions. Revised estimates for incentive payments.

Procurement

Economic: Revised escalation indices.

Quantity: Additional 56 missiles required for two additional submarines and subsequent deletion of 92 missiles

13b. (U) Cost Variance Analysis (Cont'd):

from the program.

Schedule: Deferral of 21 missiles and 20 guidance systems from FY 1990 to FY 2002. Deferral of TRIDENT II (D-5) backfit program. Deferral of 12 missiles from FY 1993/1994 to FY 2004.

Estimating: Reclassification of costs as escalation for current and prior years and revised estimates. Increased cost due to missile production stretch-out. Revised estimates based on latest contract experience.

Support: Reclassification of costs as escalation for current and prior years and revised estimates on support items. Increased support associated with stretch-out of missile production. Revised estimates based on latest pricing.

MILCON

Economic: Revised escalation indices.

Schedule: Deferral of West Coast D-5 capability.

Estimating: Reclassification of costs as escalation for current and prior years. Revised construction estimates.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation rates. (Economic)	--	+0.3
Adjustment for current and prior years escalation. (Estimating)	-0.2	-0.3
RDT&E Subtotal	-0.2	--
(2) Procurement		
Revised economic escalation rates. (Economic)		-1275.0
Support of 10, vice 18, TRIDENT II (D-5) SSBNs. Reduced flight test program. (Quantity)	-5206.4	-10490.7
Production stretch-out as a result of lower annual procurement quantities. (Schedule)	--	+1350.5
Adjustment for current and prior years escalation. (Estimating)	+28.5	+42.4

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Allocation to estimating due to quantity decrease. (Estimating)	+173.8	+428.8
Removal of SWFPAC D-5 Backfit outfitting costs at Bangor. Reduced support due to lower quantity of missiles. (Support)	-154.7	-320.4
Procurement Subtotal	-5158.8	-10264.4
(3) MILCON		
Revised economic escalation rates. (Economic)	--	-15.2
Deletion of West Coast D-5 capability. (Estimating)	-131.1	-216.3
MILCON Subtotal	-131.1	-231.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
50.934	-8.100	-2.000	0.400	--	0.800	--	--	-8.900	42.034

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
42.034	0.552	9.499	6.064	--	-0.738	--	0.244	15.621	57.655

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) MISSILE FOLLOW-ON PROD.:	Initial Contract Price Target	Ceiling	Qty
LOCKHEED, SUNNYVALE, CA N00030-89-C-0089, CPIF/FF Award: October 1, 1988 Definitized: March 13, 1989	$875.5	N/A	64

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$932.8	N/A	64	$934.9	$934.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-6.7	$-15.0
Cumulative Variances To Date (12/27/92)	$6.2	$-6.7
Net Change	$12.9	$8.3

Explanation of Change:

All deliveries have been completed on this contract. This is the final report.

(U) MISSILE FOLLOW-ON PROD:	Initial Contract Price Target	Ceiling	Qty
LOCKHEED, SUNNYVALE, CA N00030-90-C-0090, CPIF/FF Award: November 13, 1989 Definitized: November 13, 1989	$879.6	N/A	44

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$880.3	N/A	44	$889.6	$889.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-14.0	$-24.6
Cumulative Variances To Date (12/27/92)	$-17.6	$-8.3
Net Change	$-3.6	$16.3

Explanation of Change:

The ($3.6M) change in the cumulative cost variance is primarily due to overhead rate increases in manufacturing, driven by erosion of Lockheed's business base, and greater than planned manufacturing labor costs.

The schedule variance, which reflects improvement as the contract nears completion, was primarily driven by deliveries occurring later than planned for subcontract effort. There is no impact on scheduled

15. (U) Contract Information (Cont'd):
outloads. The contracted effort is ninety-eight percent complete. This contract includes funding for three D-5 missiles for the United Kingdom.

(U) MISSILE FOLLOW-ON PROD.:	Initial Contract Price Target	Ceiling	Qty
LOCKHEED, SUNNYVALE, CA N00030-92-C-0092, CPIF/FF Award: October 1, 1991 Definitized: October 1, 1991	$1185.5	N/A	51

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1215.8	N/A	51	$1214.2	$1214.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/27/92)	$-1.3	$3.8
Net Change	$-1.3	$3.8

Explanation of Change:

This is the first submission on the LMSC FY 1992 Missile Production and Deployed Systems Support contract. Forty percent of the contracted effort is now complete.

The $1.3M cost and $3.8M schedule variances are the result of numerous insignificant positive and negative actions.

(U) MISSILE FOLLOW-ON PROD:	Initial Contract Price Target	Ceiling	Qty
Lockheed, Sunnyvale, CA N00030-91-C-0091, CPIF/FF Award: October 1, 1990 Definitized: September 30, 1991	$1145.5	N/A	52

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1128.7	N/A	52	$1131.9	$1131.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.0	$1.7
Cumulative Variances To Date (12/27/92)	$-6.1	$-3.5
Net Change	$-2.1	$-5.2

Explanation of Change:

The cost and schedule variance changes are the result of numerous

15. (U) Contract Information (Cont'd):
insignificant positive and negative actions.

Seventy-eight percent of the contracted effort is now complete.

(U) GUIDANCE PIECE PART PROD:	Initial Contract Price Target	Ceiling	Qty
RAYTHEON COMPANY, SUDBURY, MA N00030-91-C-0064, FPIF Award: March 5, 1991 Definitized: March 5, 1991	$121.9	N/A	427050

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$121.9	N/A	427050	$125.6	$125.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/27/92)	$-0.7	$-0.7
Net Change	$-0.7	$-0.7

Explanation of Change:

This is the first submission on the Raytheon FY 1991 contract. Eighty-five percent of the contracted effort is now complete and the cost and schedule variances are insignificant.

(U) MISSILE FOLLOW-ON PROD:	Initial Contract Price Target	Ceiling	Qty
LOCKHEED, SUNNYVALE, CA N00030-93-C-0093, CPIF/FF Award: October 1, 1992 Definitized: N/A	$1118.7	N/A	39

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1118.7	N/A	39	$1118.7	$1118.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/27/92)	$0.2	$-0.2
Net Change	$0.2	$-0.2

Explanation of Change:

This is the first submission on the LMSC FY 1993 Missile Production and Deployed Systems Support contract. This contract includes funding for eighteen D-5 missiles for the United Kingdom.

15. (U) Contract Information (Cont'd):
The cost and schedule variances are too small for meaningful analysis this early in the contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 69.6% (16 yrs/23 yrs)

(2) Percent Program Cost Appropriated: 78.9% ($20731.4 / $26290.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	9419.4	-	-	-	9419.4
Procurement	10882.2	1132.0	1021.9	3405.5	16441.6
MILCON	429.8	-	-	-	429.8
O&M	-	-	-	-	-
Total	20731.4	1132.0	1021.9	3405.5	26290.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1978				5.0	5.0	5.0	5.0	6.8
1979				5.0	5.0	5.0	5.0	8.4
1980				25.6	25.6	25.5	25.0	10.6
1981				96.7	96.7	96.4	93.6	10.6

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1982				198.4	198.4	197.6	193.6	7.6
1983				343.9	351.0	346.6	341.2	4.9
1984				1368.5	1447.3	1446.9	1431.6	3.8
1985				1818.1	1982.6	1982.6	1973.3	3.4
1986				1731.3	1942.3	1942.3	1940.2	2.8
1987				1355.1	1565.3	1565.3	1553.1	2.7
1988				861.6	1028.6	1016.6	996.5	3.0
1989				439.3	546.5	546.5	541.8	4.2
1990				130.9	169.5	169.5	149.2	4.0
1991				32.1	43.0	43.0	41.6	4.3
1992				1.6	2.2	2.2		2.8
1993				7.4	10.4	1.0		2.4
Subtot	28			8420.5	9419.4	9392.0	9290.7	
Appropriation: 1507 Weapons Procurement, Navy								
1985				137.7	160.8	160.8	160.8	3.4
1986				420.7	508.4	508.4	496.8	2.8
1987	21		839.8	1075.6	1346.9	1342.9	1319.6	2.7

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1988	66		1314.2	1562.8	2033.5	2033.5	1929.7	3.0
1989	66		1173.3	1359.9	1839.0	1838.9	1747.1	4.2
1990	41		796.4	1001.1	1400.6	1397.9	1310.3	4.0
1991	52		866.8	1054.9	1512.6	1491.5	1160.3	4.3
1992	28		556.6	746.7	1096.9	1064.8	588.5	2.8
1993	21		478.8	654.3	983.5	533.0	28.9	2.4
1994	24		637.3	736.1	1132.0			2.4
1995	24		593.5	649.9	1021.9			2.3
1996	24		450.5	477.1	766.7			2.3
1997	24		259.7	329.1	540.5			2.2
1998	24		255.5	312.6	524.7			2.2
1999	13		140.9	254.8	437.1			2.2
2000				648.2	1136.5			2.2
Subtot	428		8363.3	11421.5	16441.6	10371.7	8742.0	

Procurement costs in FY 2000 include cost to complete funding through FY 2025.

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1205 Military Construction, Navy								
1984				72.8	79.3	44.8	44.8	3.8
1985				73.4	82.4	80.6	80.4	3.4
1986				109.3	126.3	126.3	126.3	2.8
1987				17.6	21.0	21.0	21.0	2.7
1988				14.6	18.1	17.9	17.9	3.0
1989				12.0	15.4	15.4	15.1	4.2
1990				5.7	7.6	5.9	5.9	4.0
1991				51.3	70.5	61.8	47.9	4.3
1992				6.5	9.2			2.8
Subtot				363.2	429.8	373.7	359.3	
Grand Total	456		8363.3	20205.2	26290.8	20137.4	18392.0	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady-state, full-rate production baseline of 72 per year was approved by UNSECDEF Memorandum for SECNAV of June 4, 1987 and UNSECNAV Memorandum for DIRSSP of December 1, 1987.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	1132.0	1132.0	1436.0	0.0	+304.0
Procurement Qty	24	24	36	0	+12
Proc. Unit Cost	47.167	47.167	39.889	0.000	-7.278
FY 1995					
Procurement Cost	1021.9	1021.9	1321.6	0.0	+299.7
Procurement Qty	24	24	36	0	+12
Proc. Unit Cost	42.579	42.579	36.711	0.000	-5.868
Balance of Proc. (FY 1996 to Complete)	3405.5	3405.5	2732.7	0.0	-672.8

The TRIDENT II (D-5) missile production capability is being restructured for reasons of affordability. As a result, the maximum economic rate and the minimum sustaining rate are reduced; and the annual quantities are requested at the minimum sustaining rate.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	28/28
Procurement	197/197

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Cost Elements are those included for Milestone II providing the Strategic Weapon System (SWS) subsystems' (launcher, fire control, navigation, test instrumentation, missile checkout, missile and guidance) average annual support costs by appropriation through FY 2027. The source of the costs displayed is the FY 1994 President's Budget through FY 1999 and extended through FY 2027. O&S costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Weapon System	Avg Annual Cost Per
O&M,N	423.2	N/A
OPN	19.0	N/A
WPN	1.0	N/A
Total	443.2	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&MN	698.9	104.3	106.7	3918.9	4828.8
Total	698.9	104.3	106.7	3918.9	4828.8

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: DDG 51 DESTROYER

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
DDG 51 Guided Missile Destroyer; ARLEIGH BURKE CLASS

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
AEGIS PROGRAM MANAGER
2531 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22242-5165

RADM G.A. HUCHTING, USN
Assigned: August 2, 1991
AV 332-7395 COMM (703) 602-7395

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604307N Project 001337, 001447, 001937
PROCUREMENT:
APPN 1611 ICN 24222N (Navy)

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DEPARTMENT OF DEFENSE

5. (U) Related Programs:
CG 47, SM-2 (MR), TOMAHAWK, HARPOON, PHALANX, AN/SQQ-89, MK-46, MK-I/MK-III, VERTICAL LAUNCH, and VERTICAL LAUNCH ASROC.

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6. (U) **Mission and Description:**
- The DDG 51 is a multi-mission guided missile destroyer designed to operate offensively and defensively as units of Carrier Battle Groups and Surface Action Groups, in support of Underway Replenishment Groups and the Marine Amphibious Task Forces in multi-threat environments that include air, surface, and subsurface threats. These ships will respond to Low Intensity Conflict/Coastal and Littoral Offshore Warfare (LIC/CALOW) scenarios as well as open ocean conflict, providing or augmenting power projection and forward presence requirements.

- The DDG 51 Class ships provide outstanding combat capability and survivability characteristics while considering procurement and lifetime support costs. They feature extraordinary seakeeping and low observability characteristics.

- The DDG 51 features the AEGIS Weapon System, which has quick reaction time, high firepower, and improved ECM capability in AAW. The ships' ASW System provides superior long range multi-target detection and engagement capability. Their Tomahawk, Harpoon, and MK-45 gun weapon systems provide excellent strike and surface warfare capability. The AWS is the heart of an integrated combat system that provides area coverage and command/control focus in all dimensions of Naval Warfighting: AAW, ASW, ASU, and STW.

- Structural features are an all steel hull and deckhouse with vital spaces protected and located within the hull. The ship employs a gas turbine propulsion system with CRP propellers similar to the CG 47 class.

7. (U) **Program Highlights:**
a. (U) Significant Historical Developments --
Funding for the lead ship, ARLEIGH BURKE, was provided in FY 1985 with the lead ship construction contract awarded to Bath Iron Works (BIW), Bath, Maine in April 1985. The Navy established Ingalls Shipbuilding Incorporated (ISI) as the second source for DDG 51 Class construction by awarding ISI the DDG 52 construction contract in May 1987. Milestone IIIA which granted limited production approval through FY 1989 was approved in October 1986. Approval for limited production was amended to include FY 1990, FY 1991, and FY 1992 ships and subsystems.

SECDEF's Major Warship Review validated the Navy requirement for the ARLEIGH BURKE Class, approved a procurement profile of 4 ships per year, and approved the introduction of Flight upgrades. Flight II was incorporated in the last ship in FY 1992.

DDG 51 ship custody transfer occurred on 29 April 1991 and was commissioned USS ARLEIGH BURKE on 4 July 1991.

7a. (U) Program Highlights (Cont'd):

USS ARLEIGH BURKE continued post delivery test and trials through October 1991. The BURKE thoroughly exercised all installed combat and HM&E systems and demonstrated capabilities against air, surface, and subsurface threats using some of the most difficult threat scenarios ever experienced by AEGIS ships.

USS ARLEIGH BURKE (DDG 51) was awarded the Atlantic Fleet "Top Gun" award for her impressive naval gunnery in 1991 as measured in a series of competitive exercises.

b. (U) Significant Developments Since Last Report --
Final Operational Testing for USS ARLEIGH BURKE (DDG 51) completed on 20 February 1992. The Commander, Operational Test and Evaluation Force (COMOPTEVFOR) tested every system in the ship in an operational environment with realistic, threat representative scenarios. COMOPTEVFOR found the USS ARLEIGH BURKE "operationally effective and operationally suitable...a significant addition to the fleet".

This budget submission introduces DDG 51 Flight IIA on the last FY94 ship. Changes from the Flight II ships are as follows: 1) Additions include Organic Light Airborne Multi-Purpose System (LAMPS) MK III Helicopter Capability, Dual Helicopter Facility with Recovery, Assist Securing and Traversing (RAST) system, 6 additional Vertical Launching System (VLS) Cells, and Affordability Items; 2) Deletions include Close-In Weapon System (CIWS) (when Evolved Sea Sparrow Missile (ESSM) available), Harpoon, and Tactical Towed Array Sonar (TACTAS). These deletions are reconstitutable.

Initiatives are underway addressing DDG 51 Class affordability and capability. The Navy, in conjunction with the shipbuilders and equipment prime contractors, is actively investigating initiatives that will reduce the cost of this class while ensuring that mission critical operational performance is maintained.

The Office of the Secretary of Defense established the DDG 51 Flight IIA program as an ACAT ID in July 1992; A July 93 Defense Acquisition Board review is scheduled to confirm that the Flight IIA upgrade is warranted and to establish an Acquisition Program Baseline (APB) and Acquisition Strategy.

DDG 51 Class construction has achieved numerous production milestones during the past year. The more significant are:

DDG 61 fabrication started 10 January 1992
FY 1992 ships awarded 8 April 1992
DDG 62 fabrication started 3 May 1992

7b. (U) Program Highlights (Cont'd):

DDG 54 launched 16 May 1992
DDG 63 fabrication started 13 July 1992
USS ARLEIGH BURKE completed Post Shakedown Availability (PSA) on 14 July 1992
DDG 56 launched and christened 26 September 1992
DDG 55 launched 17 October 1992
DDG 64 fabrication started 18 October 1992
DDG 52 Ship Custody Transfer occurred 19 October 1992
DDG 65 fabrication started 4 December 1992
DDG 52 (USS BARRY) commissioned 12 December 1992

ARLEIGH BURKE is currently deployed with 6th Fleet forces in the Mediterranean.

The DDG 51 program will satisfy mission requirements.

c. (U) Changes Since As Of Date --
ASN(RDA) granted approval on 15 January 1993 for continued production.

The FY 93 ship construction contracts were awarded on 19 January 1993 to Bath Iron Works and on 21 January 1993 to Ingalls Shipbuilding. BIW was awarded three ships (DDGs 73, 75, and 76) and ISI was awarded one (DDG 74). BIW now has 15 ships and ISI 11 ships under contract.

DDG 51 Class production milestones achieved:

DDG 61 keel laid 4 January 1993
DDG 62 keel laid 9 February 1993
DDG 58 launched 20 February 1993
DDG 51 IOC accomplished 28 February 1993

8. (U) Threshold Breaches:
There are currently RDT&E and Procurement Acquisition Program Baseline (APB) (dated 9 October 1991) breaches. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
Complete Concept Design	N/A	DEC 80	DEC 80
DNSARC I	JUN 81	JUN 81	JUN 81

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Complete Preliminary Design	N/A	MAR 83	MAR 83
DSARC II	DEC 83	DEC 83	DEC 83
Complete Contract Design	N/A	JUN 84	JUN 84
DDG 51 Contract Award	APR 85	APR 85	APR 85
Milestone IIIA	OCT 86	OCT 86	OCT 86
DDG 52 Contract Award	JAN 87	MAY 87	MAY 87
DDG 53 Contract Award	N/A	SEP 87	SEP 87
Lay Keel DDG 51	N/A	DEC 88	DEC 88
Launch DDG 51	N/A	SEP 89	SEP 89
DDG 51 Delivery	N/A	APR 91	APR 91
Launch DDG 52	N/A	MAR 91	MAY 91
OPEVAL	N/A	FEB 92	FEB 92
Milestone III	N/A	AUG 92	JAN 93
DDG 51 IOC	OCT 90	SEP 92	FEB 93(Ch-1)
DDG 52 Delivery	N/A	MAY 92	OCT 92
DDG 53 Delivery	N/A	FEB 93	AUG 93(Ch-1)
DDG 54 Delivery	N/A	N/A	NOV 93(Ch-1)
DDG 55 Delivery	N/A	N/A	MAR 94(Ch-1)
DDG 56 Delivery	N/A	N/A	MAR 94(Ch-1)
DDG 57 Delivery	N/A	N/A	AUG 94(Ch-1)
DDG 58 Delivery	N/A	N/A	JUL 94
DDG 59 Delivery	N/A	N/A	NOV 94(Ch-1)
DDG 60 Delivery	N/A	N/A	DEC 94
DDG 61 Delivery	N/A	N/A	MAR 95(Ch-1)
DDG 62 Delivery	N/A	N/A	APR 95
DDG 63 Delivery	N/A	N/A	JUL 95(Ch-1)
DDG 64 Delivery	N/A	N/A	SEP 95
DDG 65 Delivery	N/A	N/A	DEC 95(Ch-1)
DDG 66 Delivery	N/A	N/A	MAR 96
DDG 67 Delivery	N/A	N/A	MAY 96
Milestone IV	N/A	N/A	JUL 93
DDG 68 Delivery	N/A	N/A	SEP 96
DDG 69 Delivery	N/A	N/A	OCT 96
DDG 70 Delivery	N/A	N/A	MAR 97
DDG 71 Delivery	N/A	N/A	MAR 97
DDG 72 Delivery	N/A	N/A	SEP 97
DDG 73 Delivery	N/A	N/A	DEC 97
DDG 74 Delivery	N/A	N/A	MAR 98
DDG 75 Delivery	N/A	N/A	JUN 98
DDG 76 Delivery	N/A	N/A	SEP 98

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
DDG 51 Flight IIA Contract Award	N/A	N/A	DEC 93
DDG 51 Flight IIA Delivery	N/A	N/A	JAN 99
DDG 51 Flight IIA IOC	N/A	N/A	FEB 00

b. (U) Previous Change Explanations --

DDG 51 was rescheduled to ensure the ship was completed to Navy standards. The extension to the scheduled DDG 51 IOC provided the time necessary for lead ship operational testing.

DDG 52 launch and delivery was adjusted due to the incorporation of helicopter rearming and facilities upgrades, as recommended by Congress. The DDG 53 delivery was rescheduled to permit the shipbuilder to achieve greater production and shipyard efficiency.

DDGs 54-58 schedules were adjusted to allow for the cost efficient introduction of changes discovered during last phases of DDG 51 construction and post commissioning test and trials.

c. (U) Current Change Explanations --

(CH-1) The DDG 51 Class schedule adjustments are as follows:

	FROM	TO
DDG 51 IOC	Sep 92	Feb 93
DDG 53 DEL	Jun 93	Aug 93
DDG 54 DEL	Sep 93	Nov 93
DDG 55 DEL	Jan 94	Mar 94
DDG 56 DEL	Feb 94	Mar 94
DDG 57 DEL	Jun 94	Aug 94
DDG 59 DEL	Sep 94	Nov 94
DDG 61 DEL	Jan 95	Mar 95
DDG 63 DEL	May 95	Jul 95
DDG 65 DEL	Nov 95	Dec 95

The schedule adjustments allow for the cost efficient introduction of changes discovered during the last phase of DDG 51 follow-on Operational Test and Evaluation (FOT&E) and reduced disruption at both shipyards by leveling manpower requirements across all ship contracts.

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Production Estimate:
DCP #1337 Rev 1, Change 1 of 22 August 1986.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 09 October 1991.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
SHIP:				
Length (ft)	466	466 / 466	466	466
Beam (ft)	59	59 / 59	59	59
Navigational Draft (ft)	30.6	30.6 / 30.6	30.6	30.6
Displacement (long tons)	8300	8315 / 8315	8315	8315
Propulsion LM (Gas Turbine)	2500	2500 / 2500	2500	2500
Accommodations	341	341 / 341	341	341
Speed (knots)	30	30 / 30	30	30

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

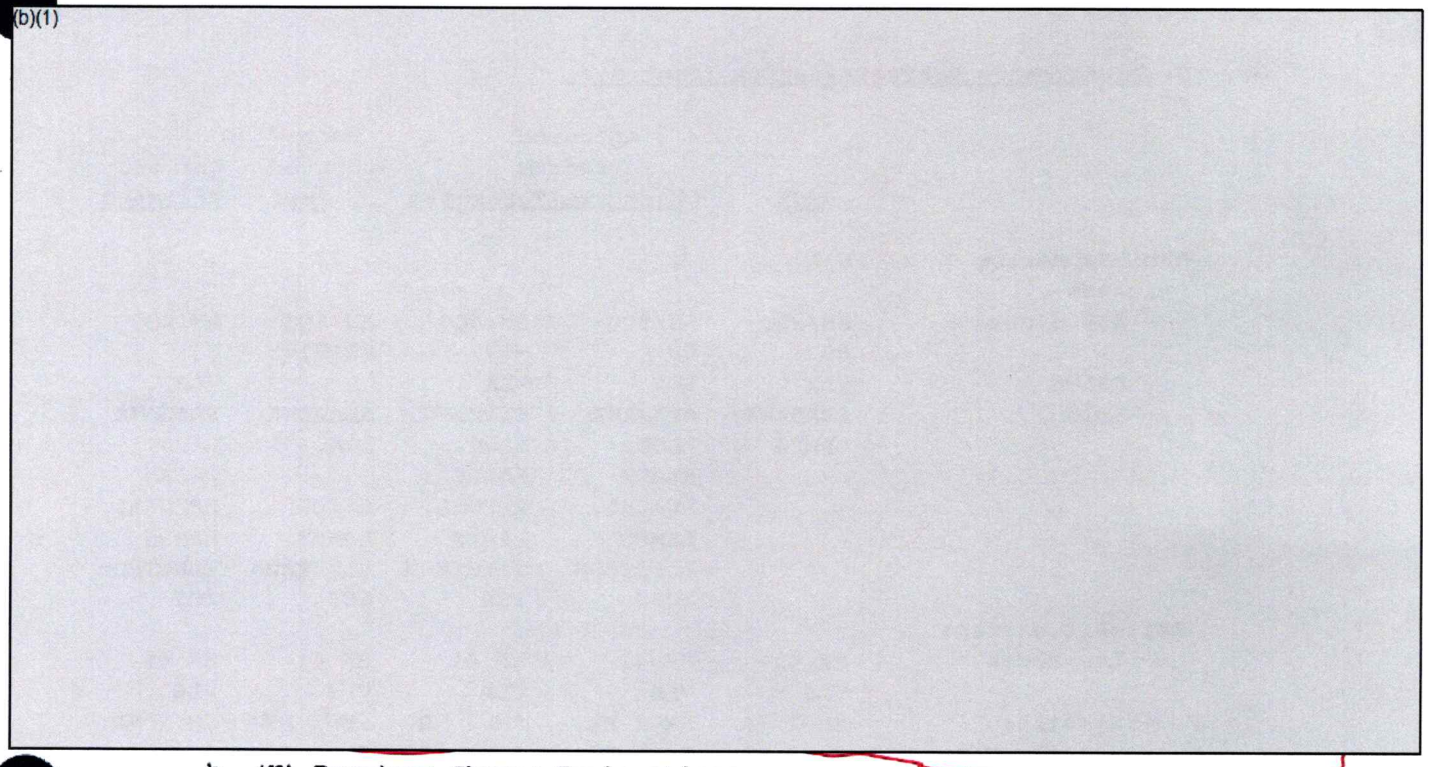
	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) **Performance Characteristics (Cont'd):**

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Anti-Submarine Warfare	N/A			
- ASW System	AN/SQQ-89	AN/SQQ-89 / AN/SQQ-89	AN/SQQ-89(V)4	AN/SQQ-89
- ASROC	VLA	VLA / VLA		VLA
- Helo	SEAHAWK; LAMPS	SEAHAWK LAND, REARM REFUEL, LAMPS ELECTRONICS	SEAHAWK LAND, REFUEL, LAMPS ELECTRONICS	SEAHAWK LAND, REARM REFUEL, LAMPS ELECTRONICS
Anti-Air Warfare				
- Launchers	MK 41 VLS	MK 41 VLS / MK 41 VLS	MK 41 VLS	MK 41 VLS
- Missiles	SM-2 MR	SM-2 MR / SM-2 MR	SM-2 MR	SM-2 MR
- Missile Fire Control System	3 MK 99	3 MK 99 / 3 MK 99	3 MK 99	3 MK 99
- Guns	2 PHALANX	2 / 2 PHALANX	2 PHALANX	2 PHALANX
Anti-Surface/Strike Warfare				
- Guns	1 5"/54	1 5" 54 / 1 5" 54	1 5"54	1 5"54
- Gunfire Control System	MK 160	MK 160 / MK 160	MK 160	MK 160
- Anti-Ship Cruise Missile	HARPOON	HARPOON / HARPOON	HARPOON	HARPOON
- Cruise Missile	TOMAHAWK	TOMAHAWK / TOMAHAWK	TOMAHAWK	TOMAHAWK
Electronic Warfare	SLQ-32 SRBOC	SLQ-32 V(3), SRBOC, Combat DF / SLQ-32 V(3), SRBOC, Combat DF	SLQ-32 (V)2(13) SRBOC	SLQ-32 (V)3, SRBOC, Combat DF
Radars				
- Surface	SPS-67	SPS-67 / SPS-67	SPS-67 (V)2	SPS-67
- 3D	SPY-1D	SPY-1D / SPY-1D	SPY-1D	SPY-1D

(b)(1)

(b)(1)



b. (U) Previous Change Explanations --

Helicopter rearming and facilities upgrades were added to the DDG Class beginning with the DDG 52. Long ton displacement increased to 8315 LT as a result of increasing ship propulsion to 100,000 shaft horsepower.

c. (U) Current Change Explanations --

The FY 94 budget submission requested DDG 51 Flight IIA beginning with the last FY94 ship. Changes from the Flight II ships would be as follows: 1) Addition of Organic LAMPS MK III Helicopter Capability, Dual Helicopter Facility with RAST, 6 VLS Cells, and Affordability Items; 2) Deletion of CIWS (when ESSM available), Harpoon, and TACTAS would be reconstitutable.

d. (U) References --

(U) Production Estimate:
DCP #1337 Rev 1, Change 1 of 22 August 1986.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 09 October 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	979.8	1305.4	1640.2
Procurement	15948.3	32522.9	34988.6
Basic Ship Costs	(5383.6)		(14669.0)
HM&E and Combat Systems	(9427.9)		(18265.2)
Other Costs	(621.9)		(713.6)
OF/PD	(514.9)		(1340.8)
Total Sailaway	(15948.3)		(34988.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.6	25.4	26.7
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 87 Base-Year $	16953.7	33853.7	36655.5
Escalation	3163.8	13525.0	9484.4
Development (RDT&E)	(-63.2)	(34.6)	(133.2)
Procurement	(3224.8)	(13488.0)	(9348.3)
Construction (MILCON)	(2.2)	(2.4)	(2.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	20117.5	47378.7	46139.9

A revised Acquisition Program Baseline (APB), which reflects program data for the Flight IIA program, has been forwarded for approval.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	23	49	51
Total	23	49	51

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
DCP #1337 Rev 1, Change 1 of 22 August 1986.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 09 October 1991.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	46139.9	45911.5	46139.9
(2) Quantity	51	49	51
(3) Unit Cost	904.70	936.97	904.70
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	3384.6	3384.6	2792.0
Less CY Adv Proc	151.3	151.3	149.2
Plus PY Adv Proc	6.3	6.3	24.9
Net Total	3239.6	3239.6	2667.7
(2) Quantity	4	4	3
(3) Unit Cost	809.90	809.90	889.23

The cost category "Less CY Adv Proc" includes $140.2 for Outfitting and Post Delivery and $11.1 of FY93 advance procurement for FY94. FY94 includes $110.7 for Outfitting and Post Delivery and $38.5 for Production Design Support.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	916.6	19173.1	27.8	20117.5
Previous Changes:				
Economic	+1.6	-1383.1	+0.2	-1381.3
Quantity	-	+23516.0	-	+23516.0
Schedule	-	+513.8	-	+513.8
Engineering	-	+1022.1	-	+1022.1
Estimating	+619.7	+375.6	-	+995.3
Other	-	-	-	-
Support	-	+1128.3	-0.2	+1128.1
Subtotal	+621.3	+25172.7	-	+25794.0
Current Changes:				
Economic	-15.2	-2410.6	-	-2425.8
Quantity	-	+1805.8	-	+1805.8
Schedule	-	+128.8	-	+128.8
Engineering	-	-52.3	-	-52.3
Estimating	+250.7	+1647.7	-	+1898.4
Other	-	-	-	-
Support	-	-1128.3	+1.8	-1126.5
Subtotal	+235.5	-8.9	+1.8	+228.4
Total Changes	+856.8	+25163.8	+1.8	+26022.4
Current Estimate	1773.4	44336.9	29.6	46139.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	979.8	15948.3	25.6	16953.7
Previous Changes:				
Quantity	-	+16337.2	-	+16337.2
Schedule	-	-	-	-
Engineering	-	+688.0	-	+688.0
Estimating	+480.4	-488.2	-	-7.8
Other	-	-	-	-
Support	-	+754.0	-0.2	+753.8
Subtotal	+480.4	+17291.0	-0.2	+17771.2
Current Changes:				
Quantity	-	+1255.0	-	+1255.0
Schedule	-	-	-	-
Engineering	-	-29.4	-	-29.4
Estimating	+180.0	+1277.7	-	+1457.7
Other	-	-	-	-
Support	-	-754.0	+1.3	-752.7
Subtotal	+180.0	+1749.3	+1.3	+1930.6
Total Changes	+660.4	+19040.3	+1.1	+19701.8
Current Estimate	1640.2	34988.6	26.7	36655.5

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices
Estimating: Revised program funding requirements

Procurement
Economic: Revised escalation indices
Quantity: Addition of 26 ships (FY 1993-1999)
Schedule: Change in acquisition profile (FY 1987-FY 1999)
Engineering: Flight II introduced in FY92
Estimating: Revised procurement estimates for ship construction and ship systems including the impact of acquisition strategy revisions, GFE savings, and revised outfitting and post delivery requirements

13b. (U) Cost Variance Analysis (Cont'd):
due to schedule and quantity changes

MILCON
Economic: Revised escalation indices
Support: Revised program funding requirements

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised December 1992 economic escalation rates (Economic)		-15.2
Revised program funding estimates (Estimating)	+180.0	+250.7
RDT&E Subtotal	+180.0	+235.5
(2) Procurement		
Revised December 1992 economic escalation rates (Economic)	--	-2410.6
Add two ships in FY 01 (Quantity)	+1255.0	+1805.8
Change in the profile for the 49 ships previously submitted from 4,4,4,4,4 (FY95-FY99) to 3,4,4,3,4,2 (FY95-FY00) (Schedule)	--	+128.8
Introduction of Flight IIA (Engineering)	-29.4	-52.3
Revised ship construction and GFE cost estimates, and affordability cost savings (Estimating)	+451.5	+393.9
Reclassify prior years outfitting and post delivery from Support (Estimating)	+754.0	+1128.3
Revised outfitting and post delivery funding requirements due to addition of 2 ships and revised estimates (Estimating)	+72.2	+125.5
Reclassify prior years outfitting and post delivery to Estimating (Support)	-754.0	-1128.3
Procurement Subtotal	+1749.3	-8.9
(3) MILCON		
Revised program funding requirements (Support)	+1.3	+1.8
MILCON Subtotal	+1.3	+1.8

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1217.1	-233.2	-263.2	15.1	-25.1	145.8	--	18.2	-342.4	874.7

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
874.7	-74.65	16.29	12.60	19.02	56.74	--	0.03	30.03	904.7

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) DDG 54,56,58 CONSTRUCT:	Initial Contract Price		
	Target	Ceiling	Qty
BATH IRON WORKS, BATH, ME N00024-89-C-2033, FPI Award: December 13, 1988 Definitized: December 13, 1988	$670.4	$771.6	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$690.6	$794.6	3	$760.6	$779.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-73.1	$25.2
Cumulative Variances To Date (01/31/93)	$-59.0	$-2.5
Net Change	$14.1	$-27.7

Explanation of Change:

Cost variance is due to labor and overhead. Schedule variance is driven by material performance.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, or escalation compensation commitments

15. (U) Contract Information (Cont'd):
($109.4M).

(U) DDG 59,61,63,65,67 CONST:	Initial Contract Price Target	Ceiling	Qty
INGALLS SHIPBUILDING,INC., PASCAGOULA, MS N00024-90-C-2800, FPI Award: February 22, 1990 Definitized: January 16, 1991	$1200.3	$1376.9	5

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1212.5	$1395.8	5	$1314.2	$1344.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.5	$43.0
Cumulative Variances To Date (01/31/93)	$-0.8	$-13.5
Net Change	$0.7	$-56.5

Explanation of Change:

Cost variance is due to labor performance. Schedule variance is driven by a lag in billing for material.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, or escalation compensation commitments ($231.6M).

(U) DDG 60,62,64,66 CONSTRUC:	Initial Contract Price Target	Ceiling	Qty
BATH IRON WORKS, BATH, ME N00024-90-C-2801, FPI Award: February 22, 1990 Definitized: January 16, 1991	$1117.8	$1293.8	4

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1094.3	$1273.8	4	$1121.3	$1144.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-8.9	$42.7
Cumulative Variances To Date (01/31/93)	$-23.6	$7.7
Net Change	$-14.7	$-35.0

Explanation of Change:

Cost variance is due to labor performance and material. Schedule variance is driven by material performance.

15. (U) Contract Information (Cont'd):

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, or escalation compensation commitments ($154.8M).

(U) DDG 68,70,72 CONSTRUCTIO:	Initial Contract Price Target	Ceiling	Qty
BATH IRON WORKS, BATH, ME N00024-92-C-2805, FPI Award: April 8, 1992 Definitized: April 8, 1992	$784.3	$904.6	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$795.0	$906.2	3	$794.9	$845.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (01/31/93)	$1.7	$7.5
Net Change	$1.7	$7.5

Explanation of Change:

Cost and schedule variances are not considered significant due to the early stages of construction.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, or escalation compensation commitments ($185.1M).

(U) DDG 69,71 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
INGALLS SHIPBUILDING,INC., PASCAGOULA, MS N00024-92-C-2800, FPI Award: April 8, 1992 Definitized: April 8, 1992	$604.6	$682.5	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$606.4	$684.5	2	$605.1	$617.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (01/31/93)	$-0.3	$4.3
Net Change	$-0.3	$4.3

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15. (U) Contract Information (Cont'd):

Explanation of Change:

Cost and schedule variances are not considered significant due to the early stages of construction.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, or escalation compensation commitments ($116.4M).

(U) DDG 73,75,76 CONSTRUCTIO:	Initial Contract Price		
	Target	Ceiling	Qty
BATH IRON WORKS, BATH, ME N00024-93-C-2800, FPI Award: January 19, 1993 Definitized: January 19, 1993	$777.0	$865.8	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$777.0	$865.8	3	$777.0	$856.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change:

This contract was awarded 19 January 93. Cost performance information, including contractor Estimated Price at Completion, will be received subsequent to this report.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, or escalation compensation commitments ($168.0M).

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 51.9% (14 yrs/27 yrs)

(2) Percent Program Cost Appropriated: 47.8% ($22063.2 / $46139.9)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY80-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	1224.4	104.0	88.5	356.5	1773.4
Procurement	20811.0	2792.0	2468.0	18265.9	44336.9
MILCON	27.8	-	-	1.8	29.6
O&M	-	-	-	-	-
Total	22063.2	2896.0	2556.5	18624.2	46139.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1980				14.9	10.5	10.5	10.5	10.6
1981				45.1	35.3	35.3	35.3	10.6
1982				121.2	102.0	102.0	102.0	7.6
1983				170.8	150.7	150.7	150.7	4.9
1984				132.2	121.1	121.1	121.1	3.8
1985				146.5	138.8	138.4	138.4	3.4
1986				96.0	93.5	93.5	89.0	2.8
1987				100.4	100.4	100.4	100.0	2.7
1988				90.7	93.4	93.4	92.8	3.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1989				48.7	52.3	52.3	52.3	4.2
1990				36.1	41.2	37.5	34.9	4.0
1991				73.9	87.5	87.5	85.0	4.3
1992				71.8	87.2	86.1	58.1	2.8
1993				88.9	110.5	72.9	2.1	2.4
1994				81.7	104.0			2.4
1995				68.0	88.5			2.3
1996				51.5	68.6			2.3
1997				38.1	51.9			2.2
1998				43.3	60.2			2.2
1999				42.6	60.6			2.2
2000				35.4	51.4			2.2
2001				24.5	36.4			2.2
2002				13.4	20.4			2.2
2003				4.5	7.0			2.2
Subtot				1640.2	1773.4	1181.6	1072.2	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1984					78.5	78.5	77.0	3.6
1985	1	308.3	896.2	1174.5	1139.5	1138.3	1095.0	2.1
1986					98.1	97.5	91.5	1.1
1987	3	144.7	2208.0	2276.7	2488.1	2385.1	2163.4	1.5
1988				3.9	16.0	10.2	9.4	2.3
1989	4		2629.1	2527.4	2833.2	2479.2	1813.7	2.8
1990	5	11.5	3235.2	3128.3	3611.3	3274.8	1798.9	1.3
1991	4	3.0	2708.0	2623.6	3170.4	2468.0	689.1	1.3
1992	5	30.9	3271.9	3216.9	3991.3	2758.1	273.5	1.7
1993	4	6.3	2655.8	2693.6	3384.6	1363.6	0.5	2.4
1994	3	96.3	2139.1	2256.1	2792.0			2.4
1995	3	9.7	1845.9	1906.4	2468.0			2.3
1996	4		2611.4	2594.6	3434.3			2.3
1997	4	16.7	2489.1	2502.1	3399.7			2.2
1998	3		2049.9	2039.6	2754.4			2.2
1999	4		2516.1	2456.7	3484.1			2.2
2000	2	25.6	1561.5	1661.4	2375.9			2.2
2001	2		1518.4	1574.4	2319.4			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
2002				112.1	153.8			2.2
2003				89.3	125.2			2.2
2004				77.9	111.7			2.2
2005				65.7	96.3			2.2
2006				7.4	11.1			2.2
Subtot	51	653.0	34335.6	34988.6	44336.9	16053.3	8012.0	
Appropriation: 1205 Military Construction, Navy								
1986				4.5	4.6	4.6	4.6	2.8
1987								2.7
1988				13.4	14.7	14.7	14.7	3.0
1989				7.5	8.5	8.5	8.5	4.2
1990								
1991								
1992								
1993								
1994								
1995								

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1996								
1997								
1998								
1999				1.3	1.8			2.2
Subtot				26.7	29.6	27.8	27.8	
Grand Total	51	653.0	34335.6	36655.5	46139.9	17262.7	9112.0	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Not required for program that produces at a rate of less than 6 items per year.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		2792.0		N/A	N/A
Procurement Qty		3		N/A	N/A
Proc. Unit Cost	N/A	930.667	N/A	N/A	N/A
FY 1995					
Procurement Cost		2468.0		N/A	N/A
Procurement Qty		3		N/A	N/A
Proc. Unit Cost	N/A	822.667	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		18265.9		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	2/2

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S estimate projects costs in constant FY93 year dollars for a 51 ship buy and encompasses the Flight I, II, and IIA designs. The Flight IIA design begins with the last ship in fiscal year 1994. There currently is no planned mid-life capability upgrade for the DDG-51 over the service life. There are 23 Officers for Flight I, II, and IIA ships. There are 311 Enlisted personnel for Flight I ships, 320 Enlisted for Flight II ships, and 321 Enlisted for Flight IIA ships. The steaming hours are estimated as 5022 hours annually. The average annual cost per ship for Operating and Support costs, over the 40 year projected service life, is estimated at $38.3M in FY87 dollars.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Average Annual Cost Per Ship	Average Annual Cost Per Ship
Personnel	9.8	N/A
Material	9.6	N/A
Purchased Services	0.1	N/A
Direct Depot Maint.	9.2	N/A
Direct Recurring Invest.	0.0	N/A
Indirect Costs	9.0	N/A
AEGIS Other Depot	0.6	N/A
Total	38.3	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	32.8	17.7	---	---	50.5
Industrial Fund	---	---	---	---	---
Total	32.8	17.7	---	---	50.5

Contractor Support Costs - The Contractor Support Costs are combined costs for both the CG 47 AEGIS Class Cruiser and the DDG 51 Class Destroyer programs.

AF-21 KC-135R

UNCLASSIFIED

93-99

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: KC-135R Reengine

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
MAY 4 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
KC-135R Modernization Program

2. DoD Component: USAF

3. Responsible Office and Telephone Number:
OC-ALC/LACMM Tinker AFB
Program Management Section
C/KC-135 Sys Prog Mgt Div
Oklahoma City, OK 73145-3019
Ms JOAN COLE
Assigned: April 1, 1990
AV 336-7259 COMM (405) 736-7259

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0101142F (Shared)
PROCUREMENT:
APPN 3010 ICN C13500 (Air Force) (Shared) PE 041218F
O & M:
PE 0702207F (Shared)

SAF/PAS
93-280 -T

5. Related Programs:
None.

OASD(PA) DFOISR 93-F-413

6. Mission and Description:
The KC-135R is a modification to KC-135A strategic tanker aircraft being procured to provide increased aerial refueling capabilities. Modification includes four fuel efficient turbofan CFM56/F108 engines and strengthened main landing gear and other system improvements. The

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6. Mission and Description (Cont'd):

reengined KC-135 is characterized by increased fuel off-load capability, improved fuel efficiency, enhanced takeoff performance, and reduced environmental impact compared to the KC-135A. This system replaced the KC-135A.

7. Program Highlights:

a. Significant Historical Developments --

In December 1977, Boeing Military Airplane Company was selected as prime contractor to provide technical and cost information for replacing engines and modernizing KC-135A tanker aircraft. In January 1980, the CFM56/F108 engine was selected and Boeing was awarded a contract leading to the design and production of hardware for converting KC-135A into KC-135R aircraft. In January 1981, the Government of France entered into agreement with the U.S. Government to provide a portion of the development funding and to fund conversion of French C-135F aircraft on the KC-135R modification line. The first modified aircraft was rolled-out on 22 Jun 1982. The first production contract for nine modification kits was awarded on 28 February 1982. KC-135R Development Test and Evaluation (DT&E) was conducted at Wichita, KS and Edwards AFB CA from 4 August 1982 to 5 April 1983, in a combined DT&E and Operational Test and Evaluation (OT&E) program. A total of 55 flights, 315.4 hours were flown. The KC-135R demonstrated satisfactory compliance with performance, flying qualifications, and propulsion specifications. In May 1984, Boeing Military Airplanes (BMA) was awarded a follow-on production contract for thirty shippable airframe kits. In July 1984, a contract for kit installation on one KC-135A airplane was awarded to Hayes International to establish a qualified competitive source for kit installation. The first modified KC-135R airplane was delivered to the U.S. Air Force on 29 June 1984. The program management responsibility transfer (PMRT) from AFSC to AFLC for the airframe portion of the program occurred 30 October 1984. The installation contract for FY86 was awarded to Boeing in October 1985 as a result of competition with Hayes International. The PMRT from AFSC to AFLC for the F-108 engine occurred in March 1986. Due to the reliability of the F108 engine, Regional Engine Maintenance Organization (REMO) requirement was reduced from three to one.

b. Significant Developments Since Last Report --

The number of delivered aircraft has been increased by forty-three for a total of three hundred eleven aircraft. KC-135R operating bases increased by five for a total of 17 (14 active Air Force bases and three Air National Guard bases). The KC-135A/Q reengine program has been reduced from 397 to 390 aircraft.

The KC-135R satisfies the mission requirement.

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date --
Eight (8) KC-135R aircraft were delivered in the second quarter. A total of 319 aircraft have been delivered.

8. Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 27 Nov 89) or Nunn McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Production Estimate	Approved Program	Current Estimate
Program Initiation	MAR 77	MAR 77	MAR 77
Engine Source Selection	JAN 80	JAN 80	JAN 80
Contract Award (Production Certification A/C)	JAN 80	JAN 80	JAN 80
Milestone III (DSARC)	JUL 81	JUL 81	JUL 81
Contract Award (First Production Lot)	FEB 82	FEB 82	FEB 82
First Flight	AUG 82	AUG 82	AUG 82
DT&E/OT&E			
Start	SEP 82	SEP 82	SEP 82
Complete	MAY 84	MAY 84	MAY 84
First Delivery to SAC	JUN 84	JUN 84	JUN 84
IOC (1st KC-135R Squadron Deployed)	JUN 85	JUN 85	JUN 85
FOC (Last Aircraft Delivery)	NOV 03	N/A	NOV 95(Ch-01)

b. Previous Change Explanations --

Change in FOC (last aircraft delivery) due to revised schedule as a result of a decrease in total quantity.

c. Current Change Explanations --

FOC (last aircraft delivery) changed from Jul 95 to Sep 95 due to schedule stretch out.

d. References --

Production Estimate:
Decision Coordination Paper (DCP), KC-135R Reengine Program, April 1, 1981 and Program Management Directive (PMD) (14)/0101142F, 31 August 1981

Approved Program:
AFAE Approved Acquisition Program Baseline dated 27 November 1989.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Mission Radius (nm)	2000	2000 / 2000	2000	2000
Mission Offload (lb)	114000	114000 / 114000	114000	114000
Takeoff Distance (ft)	9000	8100 / 8100	8100	8100
Transportability Engine and Multipurpose Trailer	N/A	F108-CF100 / F108-CF100	F108-CF100	F108-CF100
Fuel Load at Max Takeoff Gross Weight (lbs)	203300	203300 / 203300	203300	203300
Maximum Gross Weight (lbs)	322500	322500 / 322500	322500	322500
Cruise Speed (Mach)	N/A	.77 / .77	.77	.77
Critical Field Length (ft)	11000	10400 / 10400	10400	10400
Payload/Radius (2000 nm radius/lbs)	114000	114000 / 114000	114000	114000
Engine Replacement (# of men in 2 clock hrs)	N/A	3 / 3	3	3
Constant Speed Drive Accessibility for Inspection (1 man in # of min)	N/A	5 / 5	5	5
Fuel Efficiency (% more than J57)	N/A	27 / 27	27	27
Aircraft/Engine Interfaces	N/A	Quick Disconnect / Quick Disconnect	Quick Disconnect	Quick Disconnect
Basic Structure (Engine)	N/A	All interchangeable / All interchangeable	All interchangeable	All interchangeable
Five Rotor Disc Brakes (same as)	N/A	RC/EC/KC-135R/E/B / RC/EC/KC-135R/E/B	RC/EC/KC-135R/E/B	RC/EC/KC-135R/E/B
Landing Gear Attach Point Gear, with reduced max weight (No change KC-135 can use ____)	N/A	A / A	A	A

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Turbine Engine Monitor System (TEMS) (same box different software)	N/A	A-10 & KC-135R	/ A-10 & KC-135R	A-10 & KC-135R	A-10 & KC-135R
Horizontal Stabilizers (identical to)	N/A	KC-135 E&B	/ KC-135 E&B	KC-135 E&B	KC-135 E&B
Life Cycle Parts Tracking Program (ASIP) Turbine Engine	N/A	TEMS	/ TEMS	TEMS	TEMS
Minimum Essential Operation Reliability (Min % for air fueling operations)	N/A	96	/ 96	96	96
Minimum Essential Maintenance Availability Requirements (%)					
Day-to-Day	N/A	80	/ 80	80	80
Specific Priority Missions	N/A	90	/ 90	90	90

b. Previous Change Explanations --

The demonstrated performance and current estimate of the critical field length and takeoff distance were changed from 11,000 ft to 10,400 ft and from 9,000 ft to 8,100 ft respectively based on actual experience during the test program.

Additional performance objectives/thresholds added per 27 Nov 89 baseline update.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
Decision Coordination Paper (DCP), KC-135R Reengine Program, April 1, 1981 and Program Management Directive (PMD) (14)/0101142F, 31 August 1981

Approved Program:
AFAE Approved Acquisition Program Baseline dated 27 November 1989.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	91.6	89.7	89.7
Procurement	4941.5	7352.4	4416.1
Airframe	(2033.0)		(1583.7)
Engine	(2348.0)		(2362.0)
Installation			(83.4)
Total Flyaway	(4381.0)		(4029.1)
Other Wpn Sys Costs	(208.0)		(173.3)
O&M FY91 and Out	(0.0)		(0.0)
Total Other Wpn Sys	(208.0)		(173.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(352.5)		(213.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	196.0	N/A	93.1
Total FY 81 Base-Year $	5229.1	7442.1	4598.9
Escalation	2600.1	4771.1	2346.5
Development (RDT&E)	(5.6)	(5.0)	(5.0)
Procurement	(2515.2)	(4766.1)	(2312.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(79.3)	(N/A)	(29.0)
Total Then-Year $	7829.2	12213.2	6945.4
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	334	636	390
Total	334	636	390

c. Foreign Military Sales/International Cooperative Programs --
FRANCE
Sales to date include eleven (11) modification kits and installations plus two years of initial spares, support equipment, and French peculiar design changes for an estimated total cost of $220M.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
Decision Coordination Paper (DCP), KC-135R Reengine Program, April 1, 1981 and Program Management Directive (PMD) (14)/0101142F, 31 August 1981

Approved Program:
AFAE Approved Acquisition Program Baseline dated 27 November 1989.

11e. Total Program Cost and Quantity (Cont'd):

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6945.4	7110.9	6945.4
(2) Quantity	390	397	390
(3) Unit Cost	17.809	17.912	17.809
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	100.9	100.9	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	100.9	100.9	0.0
(2) Quantity	4	4	0
(3) Unit Cost	25.225	25.225	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Production Estimate	97.2	7456.7	275.3	7829.2
Previous Changes:				
Economic	-0.2	+60.7	+54.7	+115.2
Quantity	-	-202.4	+181.4	-21.0
Schedule	-	+910.9	+3.2	+914.1
Engineering	-	-	-	-
Estimating	-2.3	-1096.7	-392.5	-1491.5
Other	-	-	-	-
Support	-	-235.1	-	-235.1
Subtotal	-2.5	-562.6	-153.2	-718.3
Current Changes:				
Economic	-	-14.7	+0.4	-14.3
Quantity	-	-205.5	-	-205.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+62.0	-0.4	+61.6
Other	-	-	-	-
Support	-	-7.3	-	-7.3
Subtotal	-	-165.5	-	-165.5
Total Changes	-2.5	-728.1	-153.2	-883.8
Current Estimate	94.7	6728.6	122.1	6945.4

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Production Estimate	91.6	4941.5	196.0	5229.1
Previous Changes:				
Quantity	-	+365.4	+105.0	+470.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.9	-638.4	-207.6	-847.9
Other	-	-	-	-
Support	-	-170.0	-	-170.0
Subtotal	-1.9	-443.0	-102.6	-547.5
Current Changes:				
Quantity	-	-114.0	-	-114.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+35.1	-0.3	+34.8
Other	-	-	-	-
Support	-	-3.5	-	-3.5
Subtotal	-	-82.4	-0.3	-82.7
Total Changes	-1.9	-525.4	-102.9	-630.2
Current Estimate	89.7	4416.1	93.1	4598.9

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Reduction of management reserve to cover approved reprogrammings and comply with approved funding levels.

Procurement

Economic: Revised economic escalation indices.

Quantity: Increased quantity of kits from 334 to 392 based on lower costs; decreased from 392 to 389 to enable six per month production; increased quantity by six based on 50 per year procurement rate; addition of 246 kits total modification; decrease of 7 kits for

13b. Cost Variance Analysis (Cont'd):

attrition, total engines decreased due to utilization of 34 excess spare engines and 3 free engines obtained through contract negotiations; quantity decrease due to retirement of 81 aircraft; quantity decrease of 155 KC-135E.

Schedule: Decrease due to early procurement of 14 kits; schedule change associated with an increase in procurement in FY88 (47 to 50) and FY89 (36 to 47), schedule change associated with program stretchout, 56 kits moved from FY90-FY94 to outyears; schedule change associated with quantity increase of 38 in FY94 thru FY99; schedule stretch due to fiscal constraints, schedule change associated with decrease in total procurement quantities of 155.

Estimating: Impact of revised economic escalation indices on current and prior years; changes in kit price based on firm fixed price contract proposals, estimating changes applicable to kit quantity decreases/increases; one time change due to a correction to the methodology for computing inflation on programs with advance procurement funding; recatagorization of engine production support from flyaway estimating to support, increase in hardware costs due to re-engining of KC-135E; recatagorization of FY91 and out O&M funds to 3010 Procurement; increase in hardware estimate based on low quantity in last production year.

Support: Changes in spare engine and support costs based on refinement of the estimate and contract definitization; refinement and rephasing of initial spares estimate; refinement and rephasing of the peculiar support equipment and tech data estimates; impact of revised economic escalation indices on prior year support cost; recategorization of engine production support costs from flyaway, increase to data and product support from program stretchout, increase in support due to data and increased support equipment associated with modification of KC-135E aircraft; increase in support due to recategorization of O&M for FY91 and out; decrease in initial spares and other support associated with decrease of 155 KC-135E aircraft.

O & M

Economic: Revised economic escalation indices.

Quantity: Increase costs associated with the quantity increase from 334 to 392; reduction associated with the quantity decrease from 392 to 389; increase

13b. Cost Variance Analysis (Cont'd):

associated with installation of 6 additional aircraft, increase associated with addition of 246 aircraft; decrease associated with decrease of 8 aircraft.

Schedule: Installation schedule stretchout associated with kit procurement stretchout; decrease due to early procurement of 14 kits; installation schedule rephased to accommodate the kit procurement schedule change.

Estimating: Removal of interim contract support costs from the SAR; refinement of estimate based on contract negotiations; revised estimate of "Over and Above" contingency costs; estimating changes applicable to increase of six aircraft; adjustment for impact of revised economic indices of prior years; reduced cost based on contract experiences; installation costs corrected to include aircraft preparation costs; installation costs corrected to include additional costs for re-engining of the KC-135E; recatagorization of FY91 and out O&M installation funds to 3010 procurement funds; Correction of previous SAR for overstatement of O&M funds, Current and prior year inflation offset.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised economic escalation indices. (Economic)	N/A	-12.7
Economic adjustment for negative program change. (Economic)	N/A	-2.0
Decrease of 7 units; total program decreased from 397 to 390. (Quantity)	-114.0	-205.5
Adjustment for current & prior year inflation (Estimating)	+6.3	+11.6
Addition of FY90 and prior kits installation funded under the FY92 omnibus reprogramming. (Estimating) (Estimating)	+47.8	+83.2
Decrease in in hardware estimates associated with actual contract price decreases (Estimating)	-24.3	-42.5

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Increase in hardware estimate associated with reduction of quantity from 11 to 4 in FY 93 (Estimating)	+5.3	+9.7
Adjustment for current & prior year inflation (Support)	+0.5	+1.1
Revised estimate in initial spares associated with decrease in total program. (Support)	-2.1	-3.7
Revised estimate in other weapon systems cost associated with decrease in total program. (Support)	-1.9	-4.7
Procurement Subtotal	-82.4	-165.5
(2) O & M		
Revised economic escalation indices. (Economic)	N/A	+0.4
Adjustment for current & prior year inflation. (Estimating)	-0.3	-0.4
O & M Subtotal	-0.3	--

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
23.441	0.259	-3.947	2.344	--	-3.666	--	-0.622	-5.632	17.809

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement -- FY89/90 Airframe Kit Buy:	Initial Contract Price Target	Ceiling	Qty
THE BOEING CO, WICHITA, KS F34601-90-C-1772, FFP Award: August 31, 1990 Definitized: August 31, 1990	$140.5	N/A	31

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$139.5	N/A	31	$139.5	$139.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Contract F34601-90-C-1772 is for a total quantity of 31 kits, two of which are for FY89 procurement and twenty-nine of which are for FY90 procurement.

FY91 ENGINE BUY:	Initial Contract Price		
	Target	Ceiling	Qty
CFM INTERNATIONAL, CINCINNATTI, OH F33657-89-C-2140, FFP Award: N/A Definitized: April 30, 1991	$317.5	N/A	104

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$326.8	N/A	107	$326.8	$326.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

A contract modification increase of $9.3M for three additional spare engines.

FY91 AIRFRAME KIT BUY:	Initial Contract Price		
	Target	Ceiling	Qty
THE BOEING COMPANY, WICHITA, KS F34601-91-C-1328, FPI Award: September 16, 1991 Definitized: September 16, 1991	$120.0	$136.0	26

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$121.4	$137.4	26	$121.4	$121.4

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.2	$-0.1
Cumulative Variances To Date (12/31/92)	$-1.0	$-0.3
Net Change	$-0.8	$-0.2

Explanation of Change:

The previous cumulative variances were incorrectly reported as positive in the 31 Dec 91 SAR. The variances are correct as shown in this report.

The cumulative cost variance reflects the contractor's internal transfer of work between commercial and military shops. This transfer is affecting the overhead rate. Schedule variances are related to late delivery of materials from subcontractors.

FY90/91/92 ENGINE BUY:	Initial Contract Price Target	Ceiling	Qty
CFM INTERNATIONAL, CINCINNATTI, OH F33657-89-C-2140, FFP Award: July 17, 1992 Definitized: July 17, 1992	$436.4	N/A	146

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$436.4	N/A	146	$436.4	$436.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the first time this contract has been reported in the SAR.

Contract is for 136 install engines and three spares. Twelve install engines are FY90 procurement, 20 are for FY91, and 104 are for FY92.

FY90/91/92 AIRFRAME KIT:	Initial Contract Price Target	Ceiling	Qty
THE BOEING COMPANY, WICHITA, KS F34601-92-C-1155, FFP Award: September 25, 1992 Definitized: September 25, 1992	$156.2	N/A	34

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$156.2	N/A	34	$156.2	$156.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the first time this contract has been reported in the SAR.

Contract is for a total quantity of 34 kits. Three kits are FY90 procurement, five are for FY91, and 26 are for FY92.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 100.0% (17 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 100.0% ($6945.4 / $6945.4)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY77-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	94.7	-	-	-	94.7
Procurement	6728.6	-	-	-	6728.6
MILCON	-	-	-	-	-
O&M	122.1	-	-	-	122.1
Total	6945.4	-	-	-	6945.4

O&M included in 3010 procurement from FY91 to end of program.

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1977				2.6	1.9	1.9	1.9	6.9
1978				3.3	2.6	2.6	2.6	6.8
1979				8.2	7.0	7.0	7.0	8.4
1980				10.6	10.0	10.0	10.0	9.4
1981				15.5	16.2	15.9	15.7	11.9
1982				22.3	24.9	24.3	24.3	9.2
1983				21.8	25.5	24.8	20.3	4.9
1984				5.4	6.6	5.9	3.5	3.8
Subtot				89.7	94.7	92.4	85.3	
Appropriation: 3010 Aircraft Procurement, Air Force								
1980		4.7		4.7	5.0	5.0	5.0	9.7
1981	1	47.9	19.8	93.3	108.9	108.9	108.9	11.9
1982	9	31.7	154.2	189.4	232.6	232.6	232.6	9.6
1983	19	11.4	239.2	318.2	414.3	414.3	414.3	9.0
1984	30	4.7	330.0	398.9	541.7	541.7	541.7	7.9
1985	43	2.0	399.1	468.7	656.7	656.7	656.7	3.4

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1986	46	1.1	398.8	438.3	636.4	636.4	636.4	2.8
1987	50	0.5	454.6	503.0	760.0	760.0	710.4	2.7
1988	50	0.3	447.3	449.7	713.2	713.2	689.1	3.1
1989	49		448.5	454.3	745.1	740.2	670.3	4.0
1990	32	0.4	363.0	369.0	623.3	623.3	436.3	4.0
1991	31	3.0	335.5	351.4	618.5	581.2	71.0	4.3
1992	26		283.3	321.7	572.0	460.5	19.9	2.8
1993	4		48.1	55.5	100.9			2.4
Subtot	390	107.7	3921.4	4416.1	6728.6	6474.0	5192.6	

KC-135A/E

KC-135E 10

Obligations/Expenditures are from Accounting/Finance records, as of 31 Dec 92.

Appropriation: 3400 Operation & Maintenance, Air Force								
1981								
1982				2.6	2.9	2.9	2.9	9.4
1983				2.1	2.4	2.4	2.4	4.6
1984				8.4	10.1	10.1	10.1	4.0
1985				15.9	19.8	19.8	19.8	3.4

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3400 Operation & Maintenance, Air Force (Cont'd)								
1986				16.8	21.6	21.6	21.6	2.9
1987				15.9	21.2	21.2	21.2	2.7
1988				15.9	22.0	22.0	22.0	3.1
1989				15.5	22.1	22.1	21.5	4.2
Subtot				93.1	122.1	122.1	121.5	
Grand Total	390	107.7	3921.4	4598.9	6945.4	6688.5	5399.4	

17. Production Rate Data:

a. Production Baseline Rate

The milestone III decision was made in July 1981. A steady rate of kit production was not established at that time. However, the KC-135A/Q aircraft has achieved an average rate of 40 per year from 1984 to 1992. The program will complete procurement in FY93.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	333/333

The number of procurement deliveries applies to the modification kits.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

KC-135R Operating and Support (O&S) Ground Rules and Assumptions:

The following O&S costs for the KC-135R are based on a typical 13 PAA squadron using 302 flying hours per PAA. Manpower consists of 63 officers, 189 enlisted and 9 civilians. Logistics factors are taken from the July 1991 Air Force CAIG.

KC-135A Operating and Support (O&S) Ground Rules and Assumptions: (The KC-135A is the KC-135R antecedent system.)

The following O&S costs for the KC-135A are based on a typical 16 PAA squadron using 354 flying hours per PAA. Manpower consists of 76 officers, 292 enlisted and 13 civilians. Logistics factors are taken

18a. Operating and Support Costs (Cont'd):
from the July 1991 AF CAIG.

b. Costs -- (FY 1981 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SQUADRON KC-135R	Avg Annual Cost Per SQUADRON KC-135A
AVFUEL	5.3	10.3
DEPOT MAINTENANCE	1.4	4.6
CONSUMABLE SUPPLIES	0.8	1.1
DLRS	1.0	2.6
REPLACEMENT GSE	0.3	0.3
MILITARY PAY	6.3	8.9
CIVILIAN PAY	0.2	0.3
INSTALL SUP NON-PAY	1.0	1.5
PCS	0.3	0.5
CLASS IV MODS	1.5	1.1
MEDICAL PAY	0.1	0.1
PERSONNEL ACQ & TRAINING	2.8	3.5
Total	21.0	34.8

18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M (AF)	19.4	13.5	13.6	---	46.5
Industrial Fund	120.0	14.0	46.6	---	180.6
Total	139.4	27.5	60.2	---	227.1

AF-Z AMRAAM

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92-077

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AMRAAM (AIM-120)

AS OF DATE: December 31, 1992

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AS .....
MAY 24 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
AIM-120A Advanced Medium Range Air-to-Air Missile (AMRAAM)

2. (U) DoD Component: USAF

Joint Participants:
USAF/USN

3. (U) Responsible Office and Telephone Number:

AMRAAM Joint System Program Office	SES HARRY SCHULTE
ASC/YA-P	Assigned: August 30, 1991
EGLIN AFB, FL 32542-5000	AV 872-2307 COMM (904) 882-2307
PROGRAM EXECUTIVE OFFICER	CAPTAIN BILL WALKER
(TACTICAL AIR) (PMA-268)	Assigned: May 13, 1991
AMRAAM Joint Systems Program Office	DSN 872-2412 COMM (904) 882-2412
EGLIN AFB, FL 32542-5000	

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4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0207163F, 0603316F, 0603370F, 0603370N, 0604314F
PE 0604314N Project E0981
PROCUREMENT:
APPN 1507 ICN 2206 (Navy) PE0204162N
APPN 3020 ICN MAMRAO (Air Force) PE0207163F

5. (U) Related Programs:
F-14, F-15, F-16, F-22, F/A-18, SEEK EAGLE, NATO Aircraft (UK Sea Harrier and German F-4F), Swedish Gripen, NEFMA

6. (U) Mission and Description:
The AMRAAM Program provides for the acquisition of the next generation all-weather, all-environment medium range air-to-air missile system in response to USAF, USN, and NATO operational requirements for the 1989-2005 time period. The system is an active radar guided intercept missile with inherent electronic countermeasures capabilities for air-to-air applications against massed penetration aircraft and is designed to augment the AIM-7 Sparrow.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In January 1979, DSARC (DAB) Milestone I validated the requirement for AMRAAM. In September 1982, DSARC (DAB) Milestone II authorized Full-Scale Development (FSD). In December 1981, the FSD contract was competitively awarded to Hughes Aircraft Company. In July 1982, Raytheon was selected as the follower contractor for eventual competitive production of AMRAAM. In 1986, Congress capped both the FSD and production programs. FSD was completed within the cost cap. Congressional funding actions increased the original production cost cap from $7.000B to $7.172B in FY87, and to $7.585B in FY88 (FY84$). In November 1989, cost and schedule breaches were identified, which led to a DAB review on December 4, 1989. The DAB approved a revised estimate of $9.3B (FY84$), a Nunn-McCurdy breach of total program acquisition unit cost. On April 13, 1990, the OUSD(A) certified the program to Congress. In January 1989, AMRAAM FSD (Hughes) flight testing and second-source qualification (Raytheon) testing were completed. The Live Fire test program was successfully completed in August 1989. In July 1989, a limited operational utility exercise was conducted which demonstrated that the AMRAAM provided a greatly increased mission effectiveness over the AIM-7 and dramatically increased aircraft survivability. In May 1990, four AMRAAM missiles were fired in less than 30 seconds from a single F-15 against four separate targets (4V4) protected by chaff and Electronic Countermeasures (ECM) jamming. The missiles, in flight simultaneously, selected and killed their respective targets. The

7a. (U) Program Highlights (Cont'd):

Missile Rail Launcher (MRL) achieved its IOC in May 1990 and supported employment of AIM-9 and AMRAAM missiles in Desert Storm. Deliveries of sufficient missiles to fully equip the first operational squadron were completed in early December 1990.

The FY92 President's Budget reduced the AMRAAM procurement objective from 24,320 to 15,450 and stretched the program one year to FY99 (Lot 13) resulting in a second Nunn-McCurdy Unit Cost breach. The program was certified by the OUSD(A) to Congress on May 3, 1991. A preplanned product improvement (P3I) program was initiated in FY90 with a study effort preceding the Phase I contract which was awarded on March 15, 1991, to Hughes Aircraft Company with Raytheon as their primary subcontractor. On February 9, 1991, AMRAAM was deployed to Saudi Arabia in support of Operation Desert Storm. Although not fired, significant operational experience was gained and the missile achieved a mean time between maintenance (MTBM) of 1300 hours under actual combat conditions, greatly exceeding the mature (MTBM) requirement. On May 23, 1991, the DAB Milestone IIIB review was held and the program was authorized to continue with low rate production through FY92 (Lot 6). Formal full rate production was withheld pending completion of the certification required under Public Law 101-189 and submission of reports required by 10 U.S.C. 2366 and 10 U.S.C. 2399. Initial operational capability (IOC) for AMRAAM equipped F-15s was reached on September 25, 1991. Follow-on captive carry testing was conducted on the F-15 fuselage stations (305 hours) and F-16 (1,021 hours) with one failure induced by incorrect F-16 power application. The follow-on test demonstrated significant reliability growth toward the required 450 hour MTBM requirement. On January 13, 1992, the first F-16 unit established full operational capability (FOC). A follow-up DAB Program Review was held on April 23, 1992, and the program received approval for full rate production in FY93.

b. (U) Significant Developments Since Last Report -- Contract missile deliveries have been on or ahead of contract requirements since November 1991 achieving rates of 55 (Hughes) and 46 (Raytheon) per month. Fielded AMRAAM Lot II and III missile data from Saudi Arabia theater of operations demonstrated a 1043 hour MTBM. This is significantly higher than the user-defined requirement of 450 hours for mature Lot V missiles. In December 1992, an Iraqi Air Force MIG was downed under actual combat conditions using an AMRAAM. This encounter demonstrates AMRAAM's extreme lethality. The AF FOT&E Phase 1 program is 83 percent complete as AFOTEC launched 29 of 35 missiles.

AMRAAM is expected to satisfy all mission requirements.

7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date —
In January 1993, a second Iraqi MIG was shot down by a USAF F-16 using an AMRAAM. On 22 February 1993, the program office awarded the Lot VII contracts to Hughes and Raytheon. The FY93 Appropriations Act directed a purchase of at least 900 missiles for the Air Force. Unit costs decreased by 25 percent in Lot VII, thereby allowing the Air Force to procure 1000 missiles. The Navy bought 165 missiles, an additional 25 missiles due to the decreased unit costs. The FY94 Amended President's Budget reduced AMRAAM procurement objectives from 15,450 to 13,038 and stretched the program to FY02 (Lot 16). The AF FOT&E Phase I program completed on 6 April 1993.

8. (U) Threshold Breaches:
Last Delivery is a breach to the Acquisition Program Baseline (APB) dated May 13, 1993. A Program Deviation Report will be submitted. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones —	Production Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	NOV 78	NOV 78	NOV 78
Milestone II (DSARC)	SEP 82	SEP 82	SEP 82
Start DT&E/IOT&E	OCT 83	OCT 83	OCT 83
Certification	FEB 86	FEB 86	FEB 86
Milestone IIIA (DAB)	JUN 87	JUN 87	JUN 87
DAE Program Review	MAY 88	MAY 88	MAY 88
Start Production Deliveries	SEP 88	SEP 88	SEP 88
Complete D/IOT&E (Air Force)	JAN 89	JAN 89	JAN 89
Complete IOT&E/Captive Carry Reliability Program w/Lot 1 Assets (Air Force)	JUN 90	JUN 90	JUN 90
Initial Equippage	DEC 90	DEC 90	DEC 90
Initial Operational Capability (IOC) Air Force	MAR 91	MAR 91	SEP 91
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	APR 91	APR 91	MAY 91
DAB Program Review Full Rate Production Approval	MAR 92	MAR 92	APR 92
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	MAR 92	MAR 92	JAN 92
Complete FOT&E (OPEVAL) (Navy)	MAR 92	MAY 93	AUG 93(Ch-1)
Complete AF FOT&E Phase I	MAR 92	FEB 93	APR 93(Ch-2)

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
P3I Phase 1 CDR Complete	OCT 92	OCT 92	JAN 93(Ch-3)
Initial Operational Capability (IOC) (Navy)	SEP 92	SEP 93	SEP 93(Ch-4)
Joint Depot Activated	SEP 94	FEB 98	FEB 98(Ch-5)
P3I Phase I Flight Test Completed	DEC 94	DEC 94	DEC 94
Last Delivery	SEP 01	SEP 01	SEP 04(Ch-6)

b. (U) Previous Change Explanations --

Air Force IOC was delayed from March 1991 to September 1991 because of availability of a fully operational F-15 radar computer tape. DAB IIIB slipped from April 1991 to May 1991 due to rescheduling. DAB Program Review Full Rate Production Approval slipped from March 1992 to April 1992 due to rescheduling. FOC occurred in January 1992, two months early due to changes in the deployment schedule. Navy OPEVAL slipped from March 1992 to December 1992 because of problems with the F/A-18 radar tape. AF FOT&E Phase I slipped from March 1992 to February 1993 because of availability of test assets. The one month slip from October 1992 to November 1992 in the P3I Phase I CDR is an administrative change. Navy IOC slipped from September 1992 to December 1992 due to launcher design change. The Joint Depot Activation date slipped from September 1994 to January 1998 because of competition for depot development and the relocation of the depot from Alameda NAS, CA to Letterkenny Army Depot, PA.

c. (U) Current Change Explanations --

(Ch-1) - Navy OPEVAL slipped from December 1992 to August 1993 because of issues identified during the certification process of the F/A-18 radar tape. These require resolution prior to commencement of Operational Test IIIB.

(Ch-2) - AF FOT&E slipped from February 1993 to April 1993 because of higher priority test requirements.

(Ch-3) - The two month slip from November 1992 to January 1993 in the P3I Phase I CDR is due to software design problems. It has no schedule or cost impact on the P3I Phase I program.

(Ch-4) - Navy IOC slipped from December 1992 to September 1993 because it is dependent upon completion of Navy OPEVAL.

(Ch-5) - The one month slip in depot activation from January 1998 to

9c. (U) Schedule (Cont'd):
February 1998 is an administrative change only.

(Ch-6) - Last delivery slipped from September 2001 to September 2004 because the FY94 President's Budget stretched the program three years.

d. (U) References --

(U) Production Estimate:
DAE Approved Acquisition Program Baseline dated 17 January 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Load 4 Missiles from container (mins)	20	20	/ 30	22	22
Missile checks (mins)	1	1	/ 5	1	1
All Weather Capability	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	/ Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds

(b)(1) [redacted]

Aircraft Compatibility	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	/ F-15, F-16, F-14, F/A-18	F-15, F-16, F/A-18	F-15, F-16, F-14, F/A-18
All-Up Round	Control Surfaces field instal-led	Control Surfaces field in-stalled	/ Control Surfaces field in-stalled	Control Surfaces field in-stalled	Control Surfaces field in-stalled

(b)(1) [redacted]

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations --

Stages I and II of the Captive Carry Reliability Program (CCRP) demonstrated an overall reliability of 90 hours for the eject stations and 203 hours for the pylon stations. The Stage III CCRP demonstrated an MTBM of 118 hours, based on 1764 flying hours. Missile weight increased due to a change in materials. The Pk continues to improve.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
DAE Approved Acquisition Program Baseline dated 17 January 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11. (U) **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1725.7	2097.2	2108.2
Procurement	10552.5	10205.7	10368.9
Flyaway	(10038.5)		(9849.6)
Other Weapon Cost	(378.0)		(381.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(136.0)		(137.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	12278.2	12302.9	12477.1
Escalation	834.2	1025.0	528.1
Development (RDT&E)	(-375.1)	(-275.7)	(-311.0)
Procurement	(1209.3)	(1300.7)	(839.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	13112.4	13327.9	13005.2

The production estimate is the December 1990 current estimate in then year dollars deflated to base year 1992 dollars using January 1991 indices.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	15450	13038	13038
Total	15450	13038	13038

Excludes 169 non-fully configured RDT&E missiles in the development estimate, and 111 in the current estimate.

(b)(1)

[redacted]

)(1)

(b)(1)

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	13005.2	13648.7	13005.2
(2) Quantity	13038	15450	13038
(3) Unit Cost	0.997	0.883	0.997
b. (U) Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	745.4	745.4	556.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	745.4	745.4	556.5
(2) Quantity	1165	1165	769
(3) Unit Cost	0.640	0.640	0.724

The FY93 Appropriations Act directed a purchase of at least 900 missiles for the Air Force. Unit costs decreased by 25 percent in the Lot VII award thereby allowing the Air Force to procure 1000 missiles. The Navy bought 165 missiles, an additional 25 missiles due to the decreased unit costs.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1350.6	11761.8	0.0	13112.4
Previous Changes:				
Economic	-4.8	-265.2	-	-270.0
Quantity	-	-	-	-
Schedule	-	+293.0	-	+293.0
Engineering	+64.4	+78.6	-	+143.0
Estimating	+0.9	+338.0	-	+338.9
Other	-	-	-	-
Support	-	+31.4	-	+31.4
Subtotal	+60.5	+475.8	-	+536.3
Current Changes:				
Economic	-9.1	-279.5	-	-288.6
Quantity	-	-1333.7	-	-1333.7
Schedule	-	+131.8	-	+131.8
Engineering	+375.6	-	-	+375.6
Estimating	+19.6	+459.0	-	+478.6
Other	-	-	-	-
Support	-	-7.2	-	-7.2
Subtotal	+386.1	-1029.6	-	-643.5
Total Changes	+446.6	-553.8	-	-107.2
Current Estimate	1797.2	11208.0	-	13005.2

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1725.7	10552.5	0.0	12278.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+92.6	-	+92.6
Engineering	+24.0	+45.3	-	+69.3
Estimating	+0.5	+200.8	-	+201.3
Other	-	-	-	-
Support	-	+13.9	-	+13.9
Subtotal	+24.5	+352.6	-	+377.1
Current Changes:				
Quantity	-	-915.6	-	-915.6
Schedule	-	-	-	-
Engineering	+333.2	-	-	+333.2
Estimating	+24.8	+388.0	-	+412.8
Other	-	-	-	-
Support	-	-8.6	-	-8.6
Subtotal	+358.0	-536.2	-	-178.2
Total Changes	+382.5	-183.6	-	+198.9
Current Estimate	2108.2	10368.9	-	12477.1

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised economic indices.
Engineering: Add'l funding for electronic countermeasure updates and lethality improvements to overcome the threat
Estimating: Adjustment for current and prior years inflation

Procurement
Economic: Revised economic escalation indices.
Schedule: Reduced annual buy rates reflecting FY92 Congressional reductions and extending the program one year
Engineering: Additional requirements for non-recurring engineering to implement pre-planned product

13b. (U) Cost Variance Analysis (Cont'd):

improvements

Estimating: Adjustment for current and prior years inflation

Added requirements for technical support from the associate contractor and extending engineering/testing

Estimate adjustment for increased contractor overhead rates and delay in implementing value engineering changes

Removal of Defense Business Operations Fund

Support: Added interim contractor support previously funded in O&M

Additional spares

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-9.1
Additional funding for further technical definition of the P3I program. (Engineering)	+333.2	+375.6
Adjustment for current and prior years inflation. (Estimating)	+1.3	+1.0
Increased funding for contract overruns in PSD (Estimating)	+23.5	+18.6
RDT&E Subtotal	+358.0	+386.1
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-522.5
Economic adjustment for negative program change (Economic)	N/A	+243.0
Total Variance associated with decrease of 2377 units	-1014.1	-1484.2
Quantity variance resulting from decrease of 2377 units (Quantity)	-915.6	-1333.7
Estimating variance associated with quantity decrease (Estimating)	-98.5	-150.5

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Change in procurement buy schedule and program stretchout (Schedule)	--	+131.8
Adjustment for current and prior years inflation (Estimating)	+46.8	+50.1
Allocation of contractor fixed costs over reduced quantities and addition of fixed costs to stretch the program two years for the Air Force and three years for the Navy (Estimating)	+391.1	+514.6
Adjustment for contract overruns in LOTs I and II (Estimating)	+48.6	+44.8
Adjustment for current and prior years inflation (Support)	+4.1	+4.5
Decrease in initial spares requirements (Support)	-8.9	-13.9
Decrease in other weapon system requirements (Support)	-3.8	+2.2
Procurement Subtotal	-536.2	-1029.6

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.476	-0.058	0.143	0.121	0.019	0.188	--	-0.040	0.373	0.849

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.849	-0.043	0.053	0.033	0.040	0.063	--	0.002	0.148	0.997

15. (U) **Contract Information** (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) HUGHES/LOT IV:	Initial Contract Price		
	Target	Ceiling	Qty
HUGHES AIRCRAFT COMPANY, TUCSON, AZ F08635-90-C-0003, FFP Award: December 28, 1989 Definitized: May 31, 1991	$328.2	N/A	450

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$364.1	N/A	450	$364.1	$364.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The difference between initial and current target cost is the addition of contract modifications.

(U) RAYTHEON/LOT IV:	Initial Contract Price		
	Target	Ceiling	Qty
RAYTHEON COMPANY, BEDFORD, MA F08635-90-C-0004, FFP Award: December 22, 1989 Definitized: May 31, 1991	$333.7	N/A	450

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$349.3	N/A	450	$349.3	$349.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The difference between initial and current target cost is the addition of contract modifications.

(U) HUGHES/LOT V/VI:	Initial Contract Price		
	Target	Ceiling	Qty
HUGHES AIRCRAFT COMPANY, TUCSON, AZ F08626-91-C-0038, FFP Award: June 28, 1991 Definitized: June 28, 1991	$359.2	N/A	540

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$692.9	N/A	981	$692.9	$692.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The difference between initial and current target cost is the addition of contract modifications and exercising the Lot VI option to purchase 401 additional missiles. Additionally, the Air Force bought 40 more missiles in Lot VI from sales of AIM-7s to Saudi Arabia.

(U) RAYTHEON/LOT V/VI:
RAYTHEON COMPANY, BEDFORD, MA
F08626-91-C-0093, FFP
Award: June 28, 1991
Definitized: June 28, 1991

Initial Contract Price		
Target	Ceiling	Qty
$186.1	N/A	270

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$525.3	N/A	810	$525.3	$525.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The difference between initial and current target cost is the addition of contract modifications and exercising the Lot VI option to purchase 490 additional missiles. Additionally, the Air Force bought 50 more missiles in Lot VI from sales of AIM-7s to Saudi Arabia.

(U) HUGHES LOT VII:
HUGHES AIRCRAFT COMPANY, TUCSON, AZ
F08626-93-C-0007, FFP
Award: February 22, 1993
Definitized: February 22, 1993

Initial Contract Price		
Target	Ceiling	Qty
$333.2	N/A	849

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$333.2	N/A	849	$333.2	$333.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the first time this contract is reported in the SAR.

(U) RAYTHEON LOT VII:
RAYTHEON COMPANY, BEDFORD, MA
F08626-93-C-0008, FFP
Award: February 22, 1993
Definitized: February 22, 1993

Initial Contract Price		
Target	Ceiling	Qty
$294.3	N/A	614

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$294.3	N/A	614	$294.3	$294.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the first time this contract is reported in the SAR.

Contracts F08635-89-C-0036, Hughes Lot III, and F08635-89-C-0037, Raytheon Lot III, are over 90% complete and are not reported in this SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 65.4% (17 yrs/26 yrs)

(2) Percent Program Cost Appropriated: 52.6% ($6838.0 / $13005.2)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY77-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2002)	Total
RDT&E	1241.6	85.0	99.5	371.1	1797.2
Procurement	5596.4	556.5	597.3	4457.8	11208.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6838.0	641.5	696.8	4828.9	13005.2

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1978				11.9	6.0	6.0	6.0	6.8
1979				33.5	18.3	18.3	18.3	8.4
1980				45.0	27.3	27.3	27.3	9.4
1981				36.0	24.2	24.2	24.2	11.9
1982				4.6	3.3	3.3	3.3	9.2
1983				5.7	4.3	4.3	4.3	4.9
1984				9.3	7.3	7.3	7.3	3.8
1985				9.7	7.8	7.8	7.8	3.4
1986				5.1	4.2	4.2	3.5	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1987				5.8	5.0	5.0	4.7	2.7
1988				25.0	22.3	22.3	20.0	3.0
1989				13.4	12.4	12.4	10.9	4.2
1990				7.2	6.9	6.9	6.3	4.0
1991				3.5	3.5	3.5	3.2	4.3
1992				2.6	2.6	2.5	1.8	2.8
1993				2.5	2.6	2.1	0.1	2.4
1994				14.3	15.2			2.4
1995				26.7	29.1			2.3
1996				38.1	42.5			2.3
1997				44.9	51.2			2.2
1998				41.5	48.3			2.2
1999				45.9	54.6			2.2
Subtot				432.2	398.9	157.4	149.0	
Appropriation: 1507 Weapons Procurement, Navy								
1989	26	3.6	26.9	33.1	32.6	32.4	27.1	4.2
1990	85	17.2	68.9	92.0	92.2	84.5	40.9	4.0

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1991	300	42.4	197.1	263.8	272.0	234.0	34.9	4.3
1992	191	30.0	112.2	192.5	200.8	129.3	24.6	2.8
1993	165	24.3	74.8	114.7	122.4	79.7	0.1	2.4
1994	44	20.2	20.4	55.3	60.4			2.4
1995	86	20.2	42.7	86.5	96.5			2.3
1996	158	21.0	74.3	112.4	128.3			2.3
1997	277	34.8	120.3	172.0	200.5			2.2
1998	269	35.8	114.6	166.0	197.9			2.2
1999	263	28.5	117.1	158.9	193.5			2.2
2000	517	16.0	235.6	265.0	329.9			2.2
2001	517	17.9	233.7	261.2	332.3			2.2
2002	517	14.2	243.5	273.7	355.8			2.2
Subtot	3415	326.1	1682.1	2247.1	2615.1	559.9	127.6	
Navy	3415	326.1	1682.1	2679.3	3014.0	717.3	276.6	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1977				10.3	4.8	4.8	4.8	
1978				13.2	6.7	6.7	6.7	6.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1979				29.5	16.1	16.1	16.1	8.4
1980				43.2	26.2	26.2	26.2	9.4
1981				34.1	22.9	22.9	22.9	11.9
1982				192.1	137.9	137.9	137.9	9.2
1983				283.1	212.9	212.9	212.9	4.9
1984				252.6	197.3	197.3	196.4	3.8
1985				256.0	206.6	206.6	206.0	3.4
1986				114.1	94.4	94.4	85.0	2.8
1987				43.6	37.7	37.7	36.9	2.7
1988				29.9	26.7	26.6	23.6	3.0
1989								4.2
1990				12.3	11.8	11.8	7.8	4.0
1991				18.1	18.0	17.9	16.7	4.3
1992				29.8	30.3	29.7	23.1	2.8
1993				32.0	33.3	30.0	0.5	2.4
1994				65.5	69.8			2.4
1995				64.5	70.4			2.3
1996				48.1	53.6			2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1997				45.2	51.5			2.2
1998				23.5	27.4			2.2
1999				35.3	42.0			2.2
Subtot				1676.0	1398.3	1079.5	1023.5	
Appropriation: 3020 Missile Procurement, Air Force								
1984		34.2	1.9	36.1	29.3	29.3	29.3	8.0
1985		83.9	4.9	88.8	74.1	74.1	71.5	3.4
1986		163.8	58.0	226.7	197.9	197.9	195.2	2.8
1987	180	204.0	426.2	652.9	594.1	584.4	560.1	2.7
1988	400	210.3	519.3	745.6	705.3	701.5	685.2	3.0
1989	874	109.5	675.9	803.5	791.4	780.5	724.9	4.2
1990	803	88.2	575.6	689.7	691.1	668.1	359.2	4.0
1991	600	188.6	394.1	605.1	623.9	463.8	114.9	4.3
1992	700	78.0	422.9	523.8	546.3	473.2	52.7	2.8
1993	1000	113.4	441.3	583.9	623.0	36.3		2.4
1994	725	98.8	329.1	454.3	496.1			2.4
1995	735	62.0	364.5	448.7	500.8			2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
1996	695	105.4	330.0	453.0	516.9			2.3
1997	700	91.9	308.5	414.4	483.2			2.2
1998	755	116.0	326.1	452.3	539.1			2.2
1999	640	60.4	289.6	357.1	435.0			2.2
2000	272	59.3	130.3	196.5	244.7			2.2
2001	272	59.2	129.4	195.7	248.9			2.2
2002	272	60.2	126.7	193.7	251.8			2.2
Subtot	9623	1987.1	5854.3	8121.8	8592.9	4009.1	2793.0	
USAF	9623	1987.1	5854.3	9797.8	9991.2	5088.6	3816.5	
Grand Total	13038	2313.2	7536.4	12477.1	13005.2	5805.9	4093.1	

The recurring flyaway in FYs 84 - 86 is for 15 missiles in the Raytheon qualification lot.

Expenditures and obligations reflect program office records as of December 31, 1992.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

No official rate was established at Milestone III. Planning was for a total rate of 60 per month for each contractor.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	454.9	556.5	757.6	-101.6	+201.1
Procurement Qty	720	769	1700	-49	+931
Proc. Unit Cost	0.632	0.724	0.446	-0.092	-0.278
FY 1995					
Procurement Cost	584.0	597.3	838.7	-13.3	+241.4
Procurement Qty	720	821	1700	-101	+879
Proc. Unit Cost	0.811	0.728	0.493	+0.083	-0.235
Balance of Proc. (FY 1996 to Complete)	6325.6	4457.8	4121.7	+1867.8	-336.1

Note: Foreign Military Sales participation in FY 1994 accounts for a minimum sustaining unit cost which is lower than the current estimate unit cost.

c. (U) Deliveries (Plan/Actual) —

	To Date
RDT&E	111/111
Procurement	1819/1850

Hughes and Raytheon are ahead of schedule in missile deliveries by 16 and 15 missiles, respectively.

17d. (U) Production Rate Data (Cont'd):

d. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 15450 - @ Peak Rate: 125.0/mo			
FY 92 Base-Year $	326.100	640.700	640.700
Then Year $	373.000	723.500	723.500
@ Qty 1468 (1st three years) - @ Peak Rate: 75.0/mo			
FY 92 Base-Year $	710.700	1681.800	1681.800
Then Year $	618.000	1576.800	1576.800

Dollars in Thousands

Development Estimate reflects a total 24,320 quantity/10 year program at a maximum rate of 250/month. The first three years contained 3640 missiles at a maximum rate of 200/month.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The AMRAAM concept of operation is an all-weather, radar-guided, all-environment tactical missile for use on F-14, F-15, F-16, and F/A-18 aircraft. The AMRAAM will augment the AIM-7 and be integrated and maintained using existing support resources with no additional manpower requirements. The All-Up-Round (AUR) maintenance concept calls for aircraft loading/unloading, removal/replacement of wings and fins and Built-In-Test (BIT) within the missiles. A missile failing BIT will be sent to the Intermediate-Level Shop for test verification on the Missile Bit Test Set (MBTS). For the Navy, the missile will be downloaded/uploaded on a different station or aircraft to verify missile failure. Failed missiles, AF or Navy, will be returned to a Naval Weapons Station (NWS) for failure confirmation and isolation to the failed missile section. Defective sections will be returned to the AMRAAM depot for repair.

The O&S costs are the direct costs for the tactical missile and the Load Trainer/Captive Carry Missile (LT/CCM) associated with operating, supporting, and maintaining the AMRAAM missile over a fifteen (15) year deployment phase starting in FY91 for the AF and FY92 for the Navy. The AF estimate covers base operations including Load Trainer/Captive Carry Missile (LT/CCM), AUR fault verification, operational firings, depot repairs (seven (7) year Interim Contractor Support (ICS)), supply/item management, transportation, replenishment spares, and field software updates. The Navy estimate includes

18a. (U) Operating and Support Costs (Cont'd):

AMRAAM fleet operations and support, intermediate maintenance (NWS), depot rework (five (5) years ICS), technical support (fleet support, engineering services, quality surveillance, program management), supply support, replenishment spares, and contractor augmented support.

The O&S cost estimate is based on a Milestone IIIB program office estimate dated April 1991.

b. (U) Costs — (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per Year
Air Force	33.1	N/A
Navy	18.5	N/A
Total	51.6	N/A

The O&S estimate is the April 1992 current estimate in then year dollars deflated to base year 92 dollars using January 1992 indices.

The change in the Navy estimate from $37.5 (BY84) to $18.5 (BY92) corrects an error in the previous SAR. The April 1991 program office estimate was $18.5 (BY92) for annual costs.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M (USAF)	4.5	---	---	---	4.5
Industrial Fund	---	---	---	---	---
Total	4.5	---	---	---	4.5

There is no antecedent system; the AMRAAM is designed to augment the AIM-7 Sparrow.

AF-15 IUS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: INERTIAL UPPER STAGE

AS OF DATE: December 31, 1992

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ECTORATE FOR FREEDOM OF INFORMATIO
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. **Designation and Nomenclature (Preferred Name):**
   Inertial Upper Stage (IUS)

2. **DoD Component:** USAF

3. **Responsible Office and Telephone Number:**
   SMC/CL
   160 Skynet Street
   Suite 1215
   Los Angeles AFB, CA 90245-4683

   Col Norman H. Buchanan
   Assigned: September 30, 1988
   AV 833-1013 COMM (310) 363-1013

4. **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0305171F (Shared), 0604411F (Shared), 0305138F, 0603411F (Shared)
   PE 0305119F (Shared)
   PROCUREMENT:
   APPN 3020 ICN MLA SUP (Air Force) (Shared)
   MILCON:
   PE 0102449F (Shared)

5. **Related Programs:**
   Space Transportation Systems (STS - NASA), Titan IV, Defense Satellite Communications System (DSCS), Defense Support Program (DSP), NASA scientific and communications satellites. Air Force Special Projects (SP)

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6. Mission and Description:
The Inertial Upper Stage (IUS) is a two-stage, solid propellant, high altitude rocket booster. It can be used in conjunction with the Space Transportation System (Shuttle) or Titan IV launch vehicle. It is used to deploy payloads from low earth orbit to a higher energy mission orbit. These orbits are higher than the Space Shuttle or Titan IV rocket alone can provide. The primary users are NASA and DOD. The IUS replaced the Transtage as the Nation's primary upper stage vehicle.

7. Program Highlights:
a. Significant Historical Developments --
In April 1972, the Inertial Upper Stage (IUS) emerged from NASA's concept of the "Space Tug" for the national Space Transportation System (STS). By October 1973, the Air Force had assumed responsibility for what was then called the "Interim Upper Stage" with the agreement that NASA requirements would be accommodated. The concept validation phase began in 1975 and resulted in selection of the solid rocket motor (SRM) concept for the now designated Inertial Upper Stage. It was agreed that the IUS would support DOD/NASA missions in the 1980 - 1986 time frame.

In 1976 Boeing Aerospace Company won the competition to develop the IUS, commencing the 18-month-long validation phase. The IUS evolved from adapting an existing stage to developing a new generic upper stage to accommodate improved reliability parameters and increased mission requirements.

The Program moved into Full-Scale Development in 1978, with Boeing Aerospace Company as the prime contractor. The FSD contract was awarded for eight vehicles with heavy emphasis on reliability and system redundancy. Poor cost and schedule performance as well as inexperience in procuring high qualification piece parts led to significant cost overruns and, subsequently, to two separate contract restructures. Component and vehicle qualification testing was completed in mid-1982, ending with 26 consecutive successful SRM firings.

In October 1982, a 3871-lb DSCS II/III satellite package was launched successfully on a Titan 34-D booster. The second IUS launch, in April 1983, was a NASA TDRS satellite in the first IUS/Shuttle mission. Although the payload reached nominal mission orbit, in-flight technical problems initiated the 'IUS Anomaly Recovery Plan' and led to the third restructure of the FSD contract. Eventually, the problem was successfully identified and resolved. To date, seven FSD vehicles have been launched.

In 1983, the program entered into a follow-on production contract (F04701-82-C-0110). The total quantity to be produced was reduced from 18 to 10 and then to 6 because some payloads were transferred to the Centaur Upper Stage and other boosters. The procurement strategy was also changed to annual buy. Five of these production vehicles have flown payloads successfully.

7a. Program Highlights (Cont'd):

In 1985, the program began work on the second follow-on production and launch services contract (F04701-85-C-0101) to produce three IUS vehicles. Subsequently, the Air Force also procured IUS vehicles for NASA's TDRS E & F spacecraft and their interplanetary missions -- Galileo, Magellan, Ulysses. Four of these NASA vehicles have been flown.

In December 1986, the IUS program was directed to compete the acquisition of five Upper Stage Vehicles (USV) for the Defense Support Program's (DSP) satellites 18-22. In July, the Inertial Upper Stage was selected, and negotiations began. The acquisition was cancelled, however, when direction was received to remove five Defense Satellite Communications System (DSCS) payloads (ten satellites) from the shuttle and to fly them on Atlas II. This allowed the IUS program to dedicate these IUS vehicles to DSP satellites 18-22.

In FY88, the IUS program procured a user-funded IUS in a stand-alone buy of one vehicle. The contract was awarded to Boeing Aerospace. Later that year, an IUS vehicle deployed a NASA TDRS satellite from the Shuttle, marking the end to a two-and-a-half year standdown caused by the Challenger disaster.

There were five successful IUS missions in 1989. Among these was the successful first launch of an IUS from Titan IV launch vehicle. In 1990, three successful IUS missions were flown. In addition, a new Integration and Launch Services contract for processing and launching NASA and DOD payloads was awarded. Until FY93, this contract was funded with the Operations and Maintenance (O&M), or 3400, appropriation and with NASA funds; therefore not previously reportable in the SAR baseline.

Two successful IUS missions were flown in 1991 including NASA's TDRS-E, and a DOD (DSP) satellite. Both payloads were deployed from the Shuttle and successfully placed in their desired mission orbits. The program is procuring two IUS vehicles for DSP satellites 24-25 in FY95 with advance procurement in FY91 and FY92.

b. Significant Developments Since Last Report --
The IUS is preparing for the launch of another NASA payload (TDRS-F), scheduled for Jan 1993. A long lead letter contract for the procurement of three new vehicles (2 DOD, 1 NASA) is approaching definitization.

The Inertial Upper Stage system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
The IUS successfully placed a NASA TDRS-F satellite in orbit after being deployed from the shuttle 13 Jan 1993. The long lead letter contract was definitized in Jan 93 for the procurement of three IUS

7c. **Program Highlights (Cont'd)**:

vehicles.

8. Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 12 November 1992) breaches or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone 0 (Concept Definition)	APR 75	APR 75	APR 75
Milestone I (DSARC)	OCT 76	OCT 76	OCT 76
Milestone II (DSARC)	MAR 78	MAR 78	MAR 78
Awarded Full Scale Development Contract (F04701-78-C-0040)	MAR 78	MAR 78	MAR 78
Awarded Production Contract (F04701-82-C-0110)	JUL 80	JUL 80	JUL 80
Engine Qualification Test			
(1) Titan Configured	OCT 82	N/A	OCT 82
(2) STS Configured	JAN 83	N/A	JAN 83
First Flight Vehicles			
(1) Titan Configured	OCT 82	N/A	OCT 82
(2) STS Configured	MAR 83	N/A	MAR 83
Initial Launch Capability			
(1) Titan Configured	OCT 82	N/A	OCT 82
(2) STS Configured	MAR 83	N/A	APR 83
First Production Contract Award	JAN 83	N/A	JAN 83
Delivery of First Production Contract Vehicle	NOV 83	N/A	JUN 84
Awarded Production and Launch Support Contract (F04701-85-C-0101)	JUL 85	JUL 85	JUL 85
Follow-on Integration and Launch Support Contract (F04701-90-C-0070)	SEP 90	SEP 90	SEP 90
Follow-on Production Contract (F04701-90-R-0027)	DEC 91	DEC 92	JAN 93(Ch-1)

b. Previous Change Explanations --

Initial launch of STS configured IUS delayed from Mar 83 to Apr 83 due to Shuttle related technical problems. First production vehicle delivery delayed until after the anomaly investigation and design changes.

Milestone III (3rd Production) and Scheduled Award of Follow-on Production Contract delayed from Dec 91 to Dec 92 due to uncertainty about the number of vehicles to be procured (i.e., NASA's TDRS-G)

9b. Schedule (Cont'd):
could be resolved. No impact to the program occurred, and the user's requirements were met.

c. Current Change Explanations --

(CH-1) Follow-On Production contract awarded Jan 93 (vice Dec 92). This delay was due to the delays in NASA's decision to procure an IUS for its TDRS-G spacecraft. No impact to the program has occurred.

d. References --

Development Estimate:
PMD R-S 5068(26), 2 December 1982, Space Transportation System; R-S 7123(10), 21 June 1982, Space Launch Support.

Approved Program:
AFE Approved Acquisition Program Baseline dated 12 November 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Payload Weight to Geosynchronous Orbit (GSO) from:					
Titan IV (1b) (park orbit @ 62 x 130 n.m.i)	N/A	5304	/ 4800	5030	5030
Space Shuttle (park orbit @140 n.m.i)	N/A	5304	/ 4800	4962	4962
Reliability (%)					
Titan IV	96.0	98.0	/ 96.0	100	99.3
Space Shuttle	96.0	98.0	/ 96.0	90.0	98.5
Accuracies					
GSO Position (n.m.i)	+/-92	+/-92	/ +/-92	+/-10.5	+/-91
GSO Velocity (fps)	+/-78	+/-78	/ +/-78	+/-7.8	+/-38
GSO Inclination (degrees)	+/-0.12	+/-0.12	/ +/-0.12	+/-0.078	+/-0.10
Payload Weight to GSO					
from Titan IV (park orbit @ 87 x 140 n.m.i.)	5300	N/A	/ N/A	N/A	N/A
from Space Shuttle (park orbit @ 175 n.m.i)	5000	N/A	/ N/A	N/A	N/A

10a. **Performance Characteristics (Cont'd):**
All Objectives/Thresholds have been demonstrated. However, technical and operational performance parameters are highly dependent on specific mission requirements. The source for this approval is the AFAE Approved Baseline dated 12 Nov 92.

b. Previous Change Explanations --

Payload Wt. to GSO for STS and Titan changed from 5000 to 5133 and from 4000 to 4008 respectively, due to extendable exit cone on second stage SRM that increases thrust, and weight reduction engineering changes. Reliabilities for Titan and STS changed from 96% to 99.3% and 96% to 98.5% respectively and reflect maximum use of high reliability piece parts, stringent test requirements, and redundancy. The 90.0% demonstrated performance for STS reflected 9 of 10 missions being said to be 100% successful. Position, velocity and inclination changed from +/- 92NM, 78 ft/s and 0.12 degrees to +/- 58NM, 50 ft/s and 0.055 degrees respectively, due to use of sophisticated gamma guidance techniques. In 1985, they became +/- 28.0NM, 7.8ft/s and 0.02 degrees. The newer parameters were from STS missions as opposed to Titan 34D. Estimated payload weight to GSO from the Space Shuttle changed from 5089 pounds to 5002 pounds. There are two causes: 1. SRM-1 and SRM-2 specific impulses are approximately 0.5% lower than predicted (accounting for about 45 pounds). 2. Vehicle weight increased due to the IUS anomaly fix (accounts for about 40 pounds). The estimated payload weight to GSO on the Titan 34D changed from 4000 to 3924 to reflect the maximum predicted satellite payload weight. To compensate for the degradation of the Space Shuttle's park orbit, design enhancements will be implemented in order to achieve the current estimate of IUS performance (5250 lb from a park orbit of 216 n.m.i.). There are two reasons for the decrease of the current IUS-Titan IV performance estimate: (a) completion of booster analyses resulting in decreased Titan performance estimates, and (b) implementation of dual string Tracking, Telemetry, and Control avionics hardware on IUS. The IUS performance estimate has decreased from 5250 to 5137 due to degradation of the Shuttle's park orbit. The IUS-Titan IV current Performance estimate has decreased due to a degradation in the Titan IV performance estimate. As a result of booster performance degradations, the park orbit for Titan IV and the Space Shuttle were changed to 62 x 130 n.m.i. and 140 n.m.i., respectively, for payload weight to GSO.

c. Current Change Explanations -- None.

10d. Performance Characteristics (Cont'd):

d. References --

Development Estimate:
PMD R-S 5068(26), 2 December 1982, Space Transportation System; R-S 7123(10), 21 June 1982, Space Launch Support.

Approved Program:
AFE Approved Acquisition Program Baseline dated 12 November 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	424.2	433.8	435.3
Procurement	533.6	460.7	463.3
Flyaway	(437.0)		(366.0)
Other Wpn Sys Cost	(96.6)		(97.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	5.2	4.6	4.6
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	963.0	899.1	903.2
Escalation	1049.3	973.4	991.2
Development (RDT&E)	(269.0)	(281.1)	(283.5)
Procurement	(777.2)	(689.6)	(705.0)
Construction (MILCON)	(3.1)	(2.7)	(2.7)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2012.3	1872.5	1894.4
b. Quantity --			
Development (RDT&E)	1	1	1
Procurement	17	9	9
Total	18	10	10

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None

e. References --

Development Estimate:
PMD R-S 5068(26), 2 December 1982, Space Transportation System; R-S 7123(10), 21 June 1982, Space Launch Support.

11e. Total Program Cost and Quantity (Cont'd):

Approved Program:
AFE Approved Acquisition Program Baseline dated 12 November 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1894.4	1834.2	1894.4
(2) Quantity	10	10	10
(3) Unit Cost	189.44	183.42	189.44
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	61.8	61.8	54.8
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	61.8	61.8	54.8
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	693.2	1310.8	8.3	2012.3
Previous Changes:				
Economic	-3.3	+1.8	+0.1	-1.4
Quantity	-	-671.3	-	-671.3
Schedule	-	+10.5	-	+10.5
Engineering	+42.7	+67.4	-	+110.1
Estimating	-25.8	+284.2	-1.1	+257.3
Other	-	-	-	-
Support	+8.1	+108.6	-	+116.7
Subtotal	+21.7	-198.8	-1.0	-178.1
Current Changes:				
Economic	-0.5	-16.1	-	-16.6
Quantity	-	-	-	-
Schedule	+4.4	-	-	+4.4
Engineering	-	-26.4	-	-26.4
Estimating	-	+210.7	-	+210.7
Other	-	-	-	-
Support	-	-111.9	-	-111.9
Subtotal	+3.9	+56.3	-	+60.2
Total Changes	+25.6	-142.5	-1.0	-117.9
Current Estimate	718.8	1168.3	7.3	1894.4

13a. **Cost Variance Analysis (Cont'd):**

a. Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	424.2	533.6	5.2	963.0
Previous Changes:				
Quantity	-	-233.2	-	-233.2
Schedule	-	-	-	-
Engineering	+18.6	+23.2	-	+41.8
Estimating	-12.0	+84.8	-0.6	+72.2
Other	-	-	-	-
Support	+3.2	+33.5	-	+36.7
Subtotal	+9.8	-91.7	-0.6	-82.5
Current Changes:				
Quantity	-	-	-	-
Schedule	+1.3	-	-	+1.3
Engineering	-	-8.2	-	-8.2
Estimating	-	+62.4	-	+62.4
Other	-	-	-	-
Support	-	-32.8	-	-32.8
Subtotal	+1.3	+21.4	-	+22.7
Total Changes	+11.1	-70.3	-0.6	-59.8
Current Estimate	435.3	463.3	4.6	903.2

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Engineering: Increase to implement design enhancements specific to the DSP satellite to improve performance.

Estimating: Design changes due to on-orbit anomaly experienced in Apr 83. Re-estimated development costs for software and hardware associated with three new vehicles. Adjustment for current and prior escalation. Re-estimated IUS study costs due to termination of Flight Weight Engine Technology Program (XLR-132) funding. Adjustment for new buy and launch profile.

Support: Added 2 years of technical effort.

13b. Cost Variance Analysis (Cont'd):

Procurement

Economic: Revised economic escalation indices.

Quantity: Deleted 10 vehicles. Added 4 vehicles. Deleted 4 vehicles. Added 3 vehicles. Added 1 vehicle. Deleted 2 vehicles.

Schedule: Shifted 2 vehicle buy from FY93 to FY95.

Engineering: Engineering changes associated with 10 deleted vehicles.
Engineering changes associated with IUS Useful Life Extension Program and SRM unit upgrade.

Estimating: Changed from multi-year to annual buy strategy. Changes in second stage motors relating to on-orbit anomaly experienced in April 1983. Contractor reduced the unit cost of IUS vehicles to be more competitive with Centaur. SRM replacement eliminated as a requirement. Adjustment for addition of Space Launch Recovery funds. Changes to reflect Congressional rescissions based upon Shuttle launch slips. Re-estimated funds for problems and upgrades. Changes to absorb the impact of revised economic rates in prior years.

Support: Support change associated with Quantity change. Federally funded Research Center support for extra years launches. Support category adjustment. Reduced IUS technical effort in FY 85-90 to a level consistent with an "Operational Program". Additional year of Aerospace Corporation support. Recategorization of costs reflected in error in Dec 1988 SAR. Deletion of funds due to the inability to upgrade the Systems Integration Laboratory (SIL). Re-estimated cost of Computer Operating System (COS) upgrade. Incorporated Integration & Launch Services effort (new contract).

MILCON

Economic: Revised economic escalation indices.

Estimating: Adjustment for prior year actuals.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.5

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Component requalification tests rescheduled to FY98-99. (Schedule)	+1.3	+4.4
RDT&E Subtotal	+1.3	+3.9
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-16.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.4
Adjustment for Current & Prior Year Inflation. (Estimating)	+0.1	+0.5
Revised estimate for scope change. (Estimating)	+12.4	+42.3
Additional cost for Independent Verification and Validation of flight software (Engineering)	+0.7	+2.1
After possible scope and effectiveness of ECPs/PCPs (limits on fleet wide, changes) (Engineering)	-8.9	-28.5
Adjustment of flyaway costs for FY 95 based on previous actuals (Estimating)	+15.1	+54.3
Correction to reconcile flyaway and support cost. (Estimating)	+34.8	+113.6
(Support)	-34.8	-113.6
Adjustment for Current & Prior Inflation. (Support)	+2.0	+1.7
Procurement Subtotal	+21.4	+56.3

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
111.794	-1.800	22.306	1.490	8.370	46.800	--	0.480	77.646	189.440

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

Integ & Launch Services:	Initial Contract Price Target	Ceiling	Qty
Boeing Aerospace, Seattle, WA F04701-90-C-0070, CP/AF Award: October 15, 1990 Definitized: July 5, 1991	$298.1	$304.7	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$298.1	$304.7	0	$304.0	$304.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change:

No CPR required on this CPAF contact.

Note: As an LOE contract, there is no cost schedule variances.

Follow-On Production:	Initial Contract Price Target	Ceiling	Qty
Boeing Def. and Space GP, Kent, WA F04701-91-C-0011, FPIF/AF Award: January 29, 1993 Definitized: January 29, 1993	$204.3	$224.7	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$204.3	$224.7	3	N/A	$204.3

15. **Contract Information (Cont'd):**

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change:

Contractor C/SSR data not yet available.
This is the first time this contract is reported in the SAR.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 75.0% (18 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 78.5% ($1487.7 / $1894.4)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	694.8	4.1	3.8	16.1	718.8
Procurement	785.6	54.8	166.5	161.4	1168.3
MILCON	7.3	-	-	-	7.3
O&M	-	-	-	-	-
Total	1487.7	58.9	170.3	177.5	1894.4

16c. **Program Funding Summary (Cont'd):**

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1976				4.5	4.9	4.9	4.9	7.0
197T								
1977				21.9	25.7	25.7	25.7	7.4
1978				55.0	69.8	69.8	69.8	7.0
1979				74.7	103.3	103.3	103.3	8.4
1980				64.2	98.8	98.8	98.8	9.4
1981				63.4	108.0	108.0	108.0	11.9
1982				24.1	43.9	43.9	43.9	9.2
1983				60.9	115.9	115.9	115.9	4.9
1984				18.1	35.8	35.8	35.8	3.8
1985				15.4	31.4	31.4	31.4	3.4
1986				5.3	11.1	11.1	11.1	2.8
1987				3.5	7.7	7.7	7.7	2.7
1988				1.7	3.9	3.8	3.8	3.0
1989				4.1	9.5	7.8	7.8	4.2
1990				5.4	13.0	13.0	10.7	4.0
1991				1.9	4.8	4.8	1.5	4.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1992				2.2	5.7	3.2	0.7	2.8
1993				0.6	1.6	0.6	0.1	2.4
1994				1.5	4.1			2.4
1995				1.4	3.8			2.3
1996				1.4	3.9			2.3
1997				1.3	3.8			2.2
1998				1.4	4.1			2.2
1999				1.4	4.3			2.2
Subtot	1			435.3	718.8	689.5	680.9	
Appropriation: 3020 Missile Procurement, Air Force								
1978				0.7	1.0	1.0	1.0	7.0
1979				35.6	54.6	54.6	54.6	8.7
1980				24.0	41.9	41.9	41.9	9.7
1981				8.8	16.8	16.8	16.8	11.9
1982	2		59.5	38.2	78.4	78.4	78.4	9.6
1983	2		33.8	38.7	84.1	84.1	79.5	9.0
1984				30.4	68.8	68.8	62.4	8.0

16c. Program Funding Summary (Cont'd):

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
1985				38.6	90.0	90.0	87.4	3.4
1986	3		81.4	42.8	104.3	104.3	99.2	2.8
1987				2.8	7.0	4.6	4.4	2.7
1988				25.0	65.8	65.8	64.3	3.0
1989								4.2
1990				9.5	26.7	26.4	20.2	4.0
1991		120.2		7.9	23.1	18.2	10.3	4.3
1992				20.8	61.3	46.6	4.2	2.8
1993				20.5	61.8	32.4		2.4
1994				17.8	54.8			2.4
1995	2		71.1	52.8	166.5			2.3
1996				12.4	39.9			2.3
1997				11.9	39.2			2.2
1998				12.0	40.8			2.2
1999				12.1	41.5			2.2
Subtot	9	120.2	245.8	463.3	1168.3	733.9	624.6	

3020 Missile Procurement Funding includes support for Air Force launches.

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3300 Military Construction, Air Force								
1979				4.6	7.3	7.3	7.3	9.6
Subtot				4.6	7.3	7.3	7.3	
Grand Total	10	120.2	245.8	903.2	1894.4	1430.7	1312.8	

Obligated and expended amounts are based on program office records as of 31 Dec 92.

17. Production Rate Data:

a. Production Baseline Rate

Since production is less than 6 units in any 2 years, production rate data is not required.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		54.8		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		166.5		N/A	N/A
Procurement Qty		2		N/A	N/A
Proc. Unit Cost	N/A	83.250	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		161.4		N/A	N/A

17b. Production Rate Data (Cont'd):

Since production is less than 6 units in any 2 years, production rate data is not required.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	1/1
Procurement	7/7

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The Inertial Upper Stage is not an "operational" system because the vehicles do not require maintenance, modification, refurbishment, spares, petroleum, oil, and lubricants, etc. as aircraft do.

All costs in this section are funded in the Air Force missile procurement appropriation (FY94-99); they do not include funds provided by NASA for launch support of their TDRS-G spacecraft.

Costs are estimated on the basis of the most recent mission manifest. They do not allow for significant compression or extension of launch dates, addition of new spacecraft users, or a requirement to accommodate a new booster.

b. Costs -- (FY 1975 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost year	Avg Annual Cost Per year
Integ & Launch Services	195.6	N/A
Aerospace Corp support	47.2	N/A
Independent Verif. & Val	2.6	N/A
Propellants/Shipments	2.8	N/A
Depot Repair	30.0	N/A
Total	278.2	N/A

18b. **Operating and Support Costs (Cont'd):**

Costs---Total costs for these elements over the six-year period of interest rate.

Because of low launch rates and NASA's significant contributions to launch costs during FY 94 & 95, any average annual costs would be misleading.

No antecedent system for the IUS system exists.

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS: [illegible]-COMP(Q&A)823)
PROGRAM: LANTIRN

OK

AS OF DATE: December 31, 1992

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MAY 4 1993 10
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Low Altitude Navigation and Targeting Infrared System for Night (LANTIRN)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/VL
LANTIRN SYSTEM PROGRAM OFFICE
AERONAUTICAL SYSTEMS CENTER
WPAFB, OH 45433-6503

DR JAMES CUNNINGHAM
Assigned: June 22, 1992
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4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603249F
PE 0604249F Project 2693
PROCUREMENT:
APPN 3010 ICN NONE (Air Force)

SAF/PAS
93-279 -T

5. Related Programs:
Infrared Maverick, F-16 Aircraft, F-15E Aircraft

6. Mission and Description:
The LANTIRN system provides the Combat Air Forces with the capability of conducting counter air and interdiction at night and under-the-weather using F-15E and F-16C/D Block 40/42 aircraft. The prime system consists of a separately attached navigation pod and a

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6. Mission and Description (Cont'd):

targeting pod used in conjunction with the aircraft's head up display (HUD) and head down display (HDD). The LANTIRN interface with the carrier aircraft (F-15E and F16C/D Block 40/42) is through the 1553 data bus and the aircraft central computer. The navigation pod has a Ku band terrain following radar, a wide field-of-view forward looking infrared (FLIR) sensor, and associated electronics to project the outside IR scene and terrain following commands onto the HUD for low altitude, high speed ingress and egress. The targeting pod provides a wide or narrow field-of-view target acquisition FLIR scene projected on the HDD, automatic tracker, laser designator/ranger, IR Maverick missile boresight correlator, associated electronics, and growth provisions for an automatic target recognizer.

In addition to prime mission hardware, the LANTIRN system consists of a complete maintenance capability at the organizational, intermediate, and depot levels. O-level fault isolation to the Line Replacement Unit (LRU) level is performed with system resident Built-In-Test. I-level maintenance is performed in the bare base deployable LANTIRN Mobility Shelter Set (LMSS). The LANTIRN Depot Level Technical Repair Center (TRC), is located at Warner Robins Air Logistics Center (WR-ALC) and allows complete fault isolation and repair, of all failed hardware not repaired at the organizational and intermediate levels. Extensive use of networked computers and databases allow the depot to operate in an almost paperless environment designated as the Paperless LANTIRN Automated Depot (PLAD). Pod software maintenance will be performed in the Avionics Integration Support Facility (AISF) at WR-ALC.

7. Program Highlights:

a. Significant Historical Developments --

Direction from HQ USAF for the LANTIRN Full Scale Development (FSD) program was issued in Dec 79. Marconi Avionics Ltd. was awarded the Head-Up Display (HUD) contract in Jul 80. Martin Marietta Corporation (MMC) was awarded the Fire Control System contract in Sep 80.

During 1983 and 1984, the navigation pod (NP) successfully completed fifteen months of flight testing at Edwards AFB and two months flying over Canada, in a weather/terrain environment similar to Western Europe. The ability to fly very low at night and attack targets was fully demonstrated. In 1984, the LANTIRN program was restructured to match the revised President's Budget (PB) for FY85, 86, and 87. Recognizing that the targeting pod (TP) would require more development work and testing before production, the Air Force allowed a one-year delay for TP production in the restructure.

In Feb 85, the NP received AFSARC IIIA production approval. The

7a. Program Highlights (Cont'd):

production contract, that included the firm fixed price basic contract plus 6 options, was awarded to MMC on 1 Apr 85. That contract was for 700 pod sets (NP and TP) plus 29 sets of intermediate level support equipment (ILSE). In Jul 85, the program received direction to transfer the HUD portion of the system to the F-16 Program Office. In Sep 85, a highly successful AFSARC update report on Independent Operational Test and Evaluation (IOT&E) deficiencies/fixes took place. As a result, the first production option was exercised in Dec 85 for an additional 7 NPs and 4 sets of ILSE.

In May 86, an AFSARC IIIA authorized low rate production for an initial buy of 2 TPs. In Nov 86, the NP was approved for full rate production. By the end of 1986 the LANTIRN Full Scale Development (FSD) TP had successfully completed all Development Test and Evaluation (DT&E) and IOT&E flight testing.

In Mar 87, the first NP was delivered to the Air Force one month ahead of schedule. The first flight of a FSD NP on an F-15E took place in May 87. During May-Jul 87, Air Force Operational Test and Evaluation Center conducted successful Follow-On Test and Evaluation (FOT&E) of both NPs and TPs. Successful flight test of the production NP on the F-16 started in Aug 87.

AFSARC III full rate production decision for the TP, was deferred until Dec 88 to allow completion of the LANTIRN integration on the F-15E and weapons delivery testing on the F-16 aircraft. First operational demonstration sorties of TP were flown on the F-15E aircraft in May 89. The FY90 PB deleted 72 pod sets and 3 sets of ILSE. Air Force LANTIRN maintenance training was established at the Technical Training Center at Lowry AFB CO in Jan 89. Required Assets Available (RAA) for the NP was achieved at Seymour Johnson AFB NC in Sep 89. By Dec 89 the full scale development contract for the LANTIRN Computer Integrated Repair Capability for Warner Robins ALC was awarded. The FY90-91 Amended PB reduced the program from 628 to 561 Pod Sets. In FY89, options were exercised for 561 NP and 26 ILSE sets. The FY90 Option for 120 TPs was exercised in Dec 89. (The FY91 PB deleted 55 of the final 120 TPs to be bought, for a total TP buy of 506).

In CY 1990 the contractor delivered 198 NPs (9 ahead of schedule), 14 sets of ILSE (4 ahead of schedule), and 22 TPs (on schedule). Rate production of 18 NPs/month was achieved in Jul 90 (one month early). Technical and manufacturing problems on the TP necessitated a renegotiation of the delivery schedule in Dec 90 and slipped the TP RAA by three months and the final TP delivery by four months. An Operational Test and Evaluation "Quick Look" demonstration of the TP

7a. Program Highlights (Cont'd):

was performed at Nellis AFB with 99% mission effectiveness. The TP RAA and the NP Program Management Responsibility Transfer milestone (PMRTM) events were achieved as scheduled in Dec 90. Contracts for production of the LANTIRN Computer Integrated Capability at WR-ALC, depot training, Computer Based Technical Orders (CBTOs) and and the LANTIRN Paperless Automated Depot and other Technical Orders were awarded in CY90.

F-15E and F-16 C/D Block 40/42 LANTIRN squadrons, only equipped with the NP, deployed to Desert Shield. The LANTIRN system performed extremely well during Desert Storm with the LANTIRN equipped F-16Cs flying over 7600 combat hours and the F-15Es flying over 7000 hours. The LANTIRN navigation system had a Desert Storm fully mission capable (FMC) rate of 96 percent, while the newly-fielded LANTIRN targeting system had an FMC rate of 78 percent.

During CY 1991 the contractor delivered 222 navigation pods, 19 ahead of schedule; and 79 targeting pods, 41 behind schedule. The 26th and final LANTIRN Mobility Shelter Set (LMSS) was delivered in Apr 1991 (four months ahead of schedule). The first Pathfinder pod (essentially a navigation pod without the terrain following radar) was delivered in May 1991 for the Egyptian Foreign Military Sales (FMS) program. The USAF targeting system was successfully deployed at Osan AB, Korea, in Aug 1991, eight months early, in order to provide a precision guided munitions capability for PACAF.

Although the targeting pods being delivered met contract requirements, the contractor, (Martin Marietta Electronics Systems (MMES) of Orlando, FL,) was unable to sufficiently eliminate variability in the production process to achieve rate production. Due to the late TP deliveries, contractor progress payments were reduced in Oct 91.

b. Significant Developments Since Last Report --
A Program Deviation Report (PDR) was submitted on 6 Jan 92. The PDR reported a twelve month slip, from Sep 93 to Sep 94, in the last delivery of the targeting pod (TP) and a seven month delay, from Mar 93 to Oct 93, in depot organic capability for the TP. Revised Aquisition Program Baseline (APB) schedule for TP deliveries was approved in Feb 92. The new TP contract schedule initially reduced monthly delivery requirements below the contractor's current production capability to motivate the contractor to apply resources to proactive "process variability reduction" efforts, spares deliveries, and supportability issues. The "process variability reduction" effort was credited with doubling factory yields of critical subassemblies and reducing pod integration and test times by 65%. Martin Marietta continued to deliver TP ahead of the new

7b. Program Highlights (Cont'd):

contract schedule. Thirty-six pods have been accepted ahead of schedule. Twelve are being used as seed assets in the second phase of the retrofit program and in support of factory and flight testing. A total of 271 have been delivered on the USAF contract, and 40 have been delivered for FMS. The Feb 92 APB milestone of navigation pod (NP) organic depot capability was achieved. Delivery of the 561st and final Air Force NP was made on 31 Mar 92, two months ahead of schedule. Although USAF production of the NP is complete, Foreign Military Sales (FMS) production is currently scheduled through Sep 94, and is keeping the MMC production line open.

A new program director, Dr James Cunningham, assumed LANTIRN duties effective 22 Jun 92.

A fleetwide TP retrofit (Phase I) of two fielded configurations was completed in Aug 92 at all locations. The TP passed Reliability Qualification Testing, which demonstrated a field mean time between failures of 152 hours versus a requirement of 140 hours. The mission capable rate of all TP averaged 84% in December 92. Fielding of the latest I-level 460-15 support equipment software update was completed in Dec 92 and should reduce many test running times by 50%, resequence test procedures into a more logical flow, and allow easier access to specific tests.

Greece signed a Letter of Offer and Acceptance on 31 Dec 92 to acquire 24 navigation pods, spares, and support. Saudi Arabia signed a Letter of Intent with an implementation date of 16 Dec 92 to acquire 48 navigation pods, 48 sharpshooter pods, spares, and support equipment. FMS cases besides these new ones include Bahrain, Korea, Israel, Egypt and Turkey.

LANTIRN declared full operational capability as an Integrated Weapon System Management (IWSM) program in Jul 92. This system will satisfy mission requirements.

c. Changes Since As Of Date --
Changes to the ACC LANTIRN basing plan continues to occur. Phase II of the retrofit program began on 18 Jan 93 and will bring all fielded targeting pods to the current production configuration. Targeting pod full rate production (18 pods per month) was achieved in Feb 93.

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline (APB), dated 31 Jan 1992, or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Program Initiation	DEC 79	DEC 79	DEC 79
FCS Program Restructure	SEP 81	SEP 81	SEP 81
HUD F-16 Flight Test Complete	DEC 82	DEC 82	DEC 82
First FSD Navigation Pod Delivery	FEB 83	FEB 83	FEB 83
HUD F-16 Production Decision	JAN 83	DEC 84	DEC 84
Complete DT&E/IOT&E			
Navigation Pod	DEC 84	SEP 85	SEP 85
Targeting Pod	DEC 84	MAR 86	MAR 86
Production Decision/AFSARC IIIA			
Navigation Pod	FEB 85	MAR 85	MAR 85
Targeting Pod	FEB 85	MAY 86	MAY 86
AFSARC IIIB			
Navigation Pod	N/A	OCT 86	OCT 86
Targeting Pod	N/A	DEC 88	DEC 88
First Navigation Pod Delivery	AUG 87	APR 87	APR 87
Complete FOT&E	N/A	SEP 87	SEP 87
First Targeting Pod Delivery (Paired Delivered Navigation & Targeting Pods equates to Fire Control System)	AUG 87	JUN 88	JUN 88
F-15E OT&E -- (F-15 PD Controlled)			
Start	N/A	DEC 88	DEC 88
Complete	N/A	DEC 89	DEC 89
F-16 OT&E -- (F-16 PD Controlled)			
Start	N/A	OCT 89	MAY 89
Complete	N/A	DEC 89	OCT 89
F-15E/Blk40/42 F-16 FOT&E -- (TAC Controlled) start at Nellis AFB	N/A	NOV 89	NOV 89
RAA Nav Pod	N/A	SEP 89	SEP 89
F-15E LANTIRN Trials Period			
Start	N/A	JUL 90	JUL 90
Complete	N/A	SEP 90	SEP 90
RAA - Target Pod	N/A	SEP 90	DEC 90
PMRT - Nav Pod	N/A	FEB 91	MAY 91
Organic Depot -- Nav Pod	N/A	MAR 92	MAR 92
Last Delivery -- Nav Pod	N/A	JUN 92	MAR 92(Ch-1)
Organic Depot -- Target Pod	N/A	OCT 93	OCT 93
Last Delivery -- 506th Target Pod	N/A	SEP 94	SEP 94
Contract Award (HUD)	JUL 80	N/A	N/A
Contract Award (FCS)	SEP 80	N/A	N/A
HUD A-10 Flight Test Complete	DEC 82	N/A	N/A
HUD A-10 Production Decision	MAY 83	N/A	N/A

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
First FSD Target Pod Delivery	JUL 83	N/A	N/A
Auto Target Recognizer Adv Dev Tech Eval	OCT 84	N/A	N/A
Competitive TGT Pod Fly Off	DEC 84	N/A	N/A
FCS F-15E Flight Test Complete (FSD)	MAY 88	N/A	N/A
FCS A-10 Flight Test Complete	SEP 87	N/A	N/A
First FSC Production Delivery	AUG 87	N/A	N/A

b. Previous Change Explanations --

Automatic Target Recognizer deleted. HUD F-16 Production Decision was delayed from Jan 83 to Feb 85 to reflect actual need, then changed to Dec 84. F-16 flight testing extended to allow additional time for flight test improvements. The Aug 84 restructure delayed targeting pod (TP) program one year. F-15E was added to program scope. A-10 aircraft program changed to meet 1991 TAC IOC. A-10 aircraft requirement deleted. Additional time was required for flight test improvements. Date of actual production decision slipped from Feb 85 to Mar 85. Completion of IOT&E changed from Feb 86 to May 86. Changed IOC date for navigation pod (NP) from TBD to FY89, and for TP from TBD to FY90 to reflect current contractual commitment. Changed First FCS Production Delivery (FFCSPD) for NP and TP from TBD to Apr 87 and Jul 88 respectively to reflect contractual commitment. Completion of DT&E on F-15E aircraft by both contractor and Air Force changed from Aug 88 to Mar 89. Changed FFCSPD on NP to reflect actual delivery of the NP one month early (Mar 87 vs Apr 87). Production decisions for NP and TP adjusted to reflect USD(A) baseline approval. TP FFCSPD updated to reflect actual delivery one month early. "FCS F-16 Flight Test Complete" title was modified for both NP and TP (FSD added) to more accurately identify the milestone. The milestone title FCS F-16 Flight Test Complete was changed to Complete DT&E/IOT&E to comply with APB guidance. The milestone title Production Decision was changed to AFSARC IIIA. The following items were added to the SAR milestones: AFSARC IIIB, F-15E OT&E, F-16 OT&E, F-15E/Blk 40/42 F-16 FOT&E, F-15E LANTIRN Trial Period, PMRT, Organic Depot, and Last Delivery Tgt Pod. The milestone titles Navigation Pod and Targeting Pod were changed to First Navigation Pod Delivery and First Targeting Pod Delivery, respectively. The milestone title IOC was changed to RAA. The last 10 milestones beginning with "Contract Award (HUD)" are no longer tracked in the APB. Target pod and support equipment PMRT was deleted as a milestone, as PMRT is no longer a program requirement. The Current

9b. Schedule (Cont'd):
Estimate for Organic Depot--Target Pod changed from Mar 93 to Oct 93 and Last Delivery--506th Target Pod changed from Jan 94 to Sep 94, due to the contractor reaching rate production later than currently scheduled.

c. Current Change Explanations --

(CH-1) Changed to Mar 92 to reflect the last Navigation Pod delivery (ahead of schedule).

d. References --

Development Estimate:
Secretary of the Air Force Review 18 Nov 82. Original PMD R-Q0023(1)/63249F, 21 Dec 79.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 31 January 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
System Maximum Weight including 2 pods (lbs)	985	999	/ 999	953	975	
Terrian Following Altitude (ft)	N/A	200	/ 200	200	200	(CH-1)
MTBF FCS Mature Requirement (10,000 hrs)	N/A	34	/ 34	29.2	34	
Max Total A/C Power KVA	10.8	14.9	/ 14.9	14.9	14.9	
HUD-NAVIGATION POD						
Total Instantaneous Field of View (degrees)						
Horizontal	25	25	/ 25	30	30	(CH-2)
Vertical	20	20	/ 20	20	20	(CH-2)
HUD-TARGET POD						
Wide FOV (WFOV) (degrees)						
Horizontal	8	6	/ 6	6	6	
Vertical	8	6	/ 6	6	6	
Narrow FOV (NFOV) (degrees)						

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Horizontal	1.7	1.7 / 1.7	1.7	1.7
Vertical	1.7	1.7 / 1.7	1.7	1.7
Automatic IR Maverick Handoffs Per Pass	N/A	1 / 1	2	2
Detectivity (D*) BB				
Navigation Pod	N/A	1.3 x 10 ** 10 cm (HZ) ** 1/2 / W / 1.3 x 10 ** 10 cm (HZ) ** 1/2 / W	1.3 x 10 **10 cm (HZ)** 1/2 /W	1.3 x 10 **10 cm (HZ)** 1/2 /W
Targeting Pod	N/A	1.8 x 10 ** 10 cm (HZ) ** 1/2 / W / 1.8 x 10 ** 10 cm (HZ) ** 1/2 / W	1.8 x 10 **10 cm (HZ)** 1/2 /W	1.8 x 10 ** 10 cm (HZ)** 1/2 /W
Angular Resolution				
Navigation Pod	N/A	1.02 mrad (6 deg) 290 microrad (1.7 deg) 82.5 microrad / 1.02 mrad (6 deg) 290 microrad (1.7 deg) 82.5 microrad	1.02 mrad (6 deg) 290 microrad (1.7deg) 82.5 microrad	1.02 mrad (6 deg) 290 microrad (1.7deg) 82.5 microrad
Target Acquisition Range NM	N/A	4 / 4	4	4

b. Previous Change Explanations --

Automatic Target Recognizer deleted. The Navigation Pod Field Projection Interim Threshold development estimate was 13.2 hours and demonstrated performance from IOT&E was 11.2 hours. Operational HUD Horizontal Total Field of View and Instantaneous Field of View development estimate was 25 degrees and demonstrated performance was 30 degrees. HUD weight revised to measured value. HUD MTBF revised to reflect impact of DT&E/IOT&E performance. Navigation and Targeting Pod reliability data was added as a result of separating procurement of these two pods. Additional weight allowed in specifications for F-15E integration (978 to 990). FCS MTBF modified when Target Pod reliability growth curve restructured in March 1985. Development estimate was 28.5. Demonstrated performance from IOT&E on the Target Pod Field Projection increased from 26.3 to 40.1. Demonstrated performance for auto IR Maverick Handoffs per pass increased from 1 to 2. A-10 requirement deleted. Weight changed from 990 to 999 as a result of minor redesign for compatability with

10b. Performance Characteristics (Cont'd):
F-15E flight environment. Maximum power changed to 14.8 to provide additional power for the Environmental Control Unit to handle the F-15E flight environment. The correct value for Max Total A/C Pwr is 14.9KVA. Automatic IR Maverick Handoffs Per Pass was added to the APB. The last 41 characteristics beginning with "HUD Transmissivity (%)" are no longer tracked in the APB. The current estimate for System Maximum Weight (RMS 83-10) reflects the latest performance specification on maximum production pod set weights. Detectivity BB Navigation Pod was corrected from that erroneously reported in the Dec 90 SAR.

c. Current Change Explanations --

(CH-1) The Current Estimate and the Demonstrated Performance have been changed from N/A to the actual demonstrated performance of the system.

(CH-2) The Current Estimate reflects the actual demonstrated performance of the system.

d. References --

Development Estimate:
Secretary of the Air Force Review 18 Nov 82. Original FMD R-Q0023(1)/63249F, 21 Dec 79.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 31 January 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	420.4	403.6	420.6
Procurement	1681.7	1874.6	1899.6
Total Flyaway	(1297.9)		(1388.6)
Other Weapon Systems Cost	(105.0)		(193.1)
Peculiar Support	(206.7)		(223.6)
Initial Spares	(72.1)		(94.3)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 80 Base-Year $	2102.1	2278.2	2320.2

11a. Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	1721.1	1523.1	1588.5
Development (RDT&E)	(128.5)	(124.7)	(140.7)
Procurement	(1592.6)	(1398.4)	(1447.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3823.2	3801.3	3908.7
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	1316	1067	1067
Total	1316	1067	1067

There are 12 Development (RDT&E) units in this program. They are not fully configured end items and are not part of the Air Force inventory. Quantity includes targeting and navigation pods.

c. Foreign Military Sales/International Cooperative Programs --

ISRAEL	84.3	0.0	0.0
EGYPT	122.7	0.0	0.0
KOREA	104.0	0.0	0.0
KOREA II	152.9	0.0	0.0
TURKEY	185.5	0.0	0.0

The Israel case changed from 56.4 to 84.3, this is to fund an additional (8-10) buy of Sharpshooter Pods.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
Secretary of the Air Force Review 18 Nov 82. Original PMD R-00023(1)/63249F, 21 Dec 79.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 31 January 1992.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3908.7	3819.5	3908.7
(2) Quantity	1067	1067	1067
(3) Unit Cost	3.663	3.580	3.663
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	7.6	7.6	26.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	7.6	7.6	26.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Unit cost has increased due to supportability and P3I efforts under IWSM.

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	548.9	3274.3	0.0	3823.2
Previous Changes:				
Economic	-12.7	-290.9	-	-303.6
Quantity	-	-265.0	-	-265.0
Schedule	+28.5	+24.5	-	+53.0
Engineering	-67.7	+38.4	-	-29.3
Estimating	+17.4	+323.8	-	+341.2
Other	-	-	-	-
Support	+18.0	+182.0	-	+200.0
Subtotal	-16.5	+12.8	-	-3.7
Current Changes:				
Economic	+0.5	+5.3	-	+5.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+28.4	-3.9	-	+24.5
Other	-	-	-	-
Support	-	+58.9	-	+58.9
Subtotal	+28.9	+60.3	-	+89.2
Total Changes	+12.4	+73.1	-	+85.5
Current Estimate	561.3	3347.4	-	3908.7

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	420.4	1681.7	0.0	2102.1
Previous Changes:				
Quantity	-	-140.8	-	-140.8
Schedule	+19.8	+8.0	-	+27.8
Engineering	-49.0	+18.9	-	-30.1
Estimating	+5.0	+206.4	-	+211.4
Other	-	-	-	-
Support	+9.3	+99.3	-	+108.6
Subtotal	-14.9	+191.8	-	+176.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+15.4	-1.7	-	+13.7
Other	-	-	-	-
Support	-	+27.9	-	+27.9
Subtotal	+15.4	+26.2	-	+41.6
Total Changes	+0.5	+218.0	-	+218.5
Adjustments	-0.3	-0.1	-	-0.4
Current Estimate	420.6	1899.6	-	2320.2

b. Previous Change Explanations --

RDT&E

Economic: Revised economic and OSD inflation/escalation indices.

Schedule: A-10 slipped to out years to compensate for FY84 program reductions.

Engineering: Funding and technology for the AIR deleted from the program. Adjustment for prior year escalation. A-10 Aircraft removed from program.

Estimating: Program restructure due to FY84 congressional cuts and increased test requirements. Also adjusted for changes in current and prior year escalation

13b. Cost Variance Analysis (Cont'd):

indices. Corrected error from 31 Dec 84 SAR. Reestimate of program. Refinement of estimate. Increase in FY91 funding for completion of software DT&E efforts. Decrease in FY90 to fund PRAM and C-17 unfunded requirements and expiring funds. Decrease in FY92 for CAAS, ANSER, and FFRDC assessments.

Support: Support equipment program restructured to reflect $30M FY84 congressional cut.

Procurement

Economic: Revised economic and OSD inflation/escalation indices.

Quantity: Change in the number of pod sets from 700 to 628 (1400 pods to 1256 pods). Decrease in number of pods by 189 pods (67 NAV & 122 TGT).

Schedule: Target pod production start date delayed by one year. Total buy schedule extended one year. Moved production up from FYs 90-91 to FYs 88-89.

Engineering: Additional funds for Eye Safe Laser and F-15E Compatibility.

Estimating: Adjustment for current and prior year escalation. Corrected error from 31 Dec 84 SAR. Include additional R&M/Warranty requirements. Restoration of FY88-91 FFP Contract. Reestimate of ECO requirements. Refinement of the estimate based on actual contractual negotiations. Decrease due to an EPA adjustment.

Support: Reestimate of spares requirement. Added 4 Support Equipment sets and revised initial spares in FY83 SAR. SE sets reduced from 40 to 29 based on user requirements. Restoration of FY88-91 FFP contract. Adjustment for current and prior year escalation. Reestimate PSE requirements. PSE sets reduced from 29 to 26. Redefined estimate of Other Government Costs (OGC). PSE adjusted based on actual contractual negotiations. Reestimate of Depot requirements due to increases for repair equipment, AISF software and quality/efficiency initiatives. Increase in OGC because of the EPA adjustment. Decrease in OGC because of a payback in prior reprogramming in FY90. Increase in OGC for Interim Contractor Support (ICS) due to a change from 3400 APPN to 3010 APPN.

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation rates (Economic)	N/A	+0.5
Adjustment for Current & Prior Inflation. (Estimating)	-0.3	-0.5
Additional mission support received in FY92, FY94, FY95, FY96 AND FY97 (Estimating)	+2.0	+3.7
Additional funding for Laser Spot Tracker capability (Estimating)	+13.7	+25.2
RDT&E Subtotal	+15.4	+28.9
(2) Procurement		
Revised escalation rates. (Economic)	N/A	+5.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation. (Estimating)	-1.7	-3.9
Adjustment for Current & Prior Inflation. (Support)	-1.1	-1.4
Additional funding for initial spares (Support)	+10.2	+21.0
Decrease in Peculiar Support Equipment due to a change in inflation rates (Support)	-0.4	-0.7
Adjustment for an increase in prior year inflation rates for peculiar support equipment, spares and other weapons system cost categories (Support)	+1.0	+1.7
Additional funding for post production support, operational flight plans, and interim contractor support (Support)	+18.2	+38.3
Procurement Subtotal	+26.2	+60.3

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.905	-0.279	0.428	0.050	-0.027	0.343	--	0.243	0.758	3.663

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

LANTIRN PRODUCTION:	Initial Contract Price		
	Target	Ceiling	Qty
Martin Marietta, Orlando, FL F33657-84-C-0004, FFP Award: April 1, 1985 Definitized: April 1, 1985	$87.3	N/A	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$3099.5	N/A	1067	$3131.3	$3131.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

The current target price has changed due to Engineering Change Proposal (ECP) activity on the production contract. These ECPs include: support equipment software updates, interim contractor support extension, target and navigation pod software updates, contractor flight test extension, smart cooler implementation and various other smaller ECPs.

The production contract is a firm fixed price (FFP) contract and no CPR is received, consequently there is no data for variance analysis.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 75.0% (15 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 98.2% ($3837.4 / $3908.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY79-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-98)	Total
RDT&E	535.9	21.4	2.0	2.0	561.3
Procurement	3301.5	26.0	6.2	13.7	3347.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3837.4	47.4	8.2	15.7	3908.7

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1979				11.2	10.6	10.6	10.6	8.4
1980				30.0	31.7	31.7	31.7	9.4
1981				35.4	41.4	41.4	41.4	11.9
1982				68.9	86.1	86.1	86.1	9.2
1983				76.4	99.8	99.8	99.8	4.9
1984				42.2	57.3	57.3	57.3	3.8

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Than-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1985				69.6	97.7	97.7	97.7	3.4
1986				25.6	36.8	36.8	36.8	2.8
1987				25.2	37.9	37.4	32.5	2.7
1988				12.4	19.3	19.0	18.6	3.0
1989				2.8	4.5	4.1	4.0	4.2
1990				1.5	2.5	2.3	2.3	4.0
1991				1.0	1.7	1.6	1.6	4.3
1992				1.1	1.9	1.7	1.5	2.8
1993				3.7	6.7	1.0	0.3	2.4
1994				11.5	21.4			2.4
1995				1.1	2.0			2.3
1996				0.5	1.0			2.3
1997				0.5	1.0			2.2
Subtot				420.6	561.3	528.5	522.2	
Appropriation: 3010 Aircraft Procurement, Air Force								
1981		0.8		0.8	1.0	1.0	1.0	11.9
1982		3.6		3.6	5.0	5.0	5.0	9.6

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1983								
1984								
1985	2	31.1	25.4	57.4	90.0	89.4	89.4	3.4
1986	9	102.5	99.3	260.9	423.9	420.6	418.8	2.8
1987	150	106.9	222.8	475.2	803.5	803.5	760.9	2.7
1988	250	30.8	263.7	444.5	789.0	788.3	701.9	3.0
1989	471	8.1	312.1	386.8	709.7	706.5	706.4	4.2
1990	120	16.6	100.8	138.9	262.6	262.4	143.5	4.0
1991	65	1.3	62.8	102.0	200.9	177.5	116.5	4.3
1992				4.2	8.3	4.1	0.6	2.8
1993				3.7	7.6	1.6		2.4
1994				12.5	26.0			2.4
1995				2.9	6.2			2.3
1996				3.3	7.2			2.3
1997				2.4	5.4			2.2
1998				0.5	1.1			2.2
Subtot	1067	301.7	1086.9	1899.6	3347.4	3259.9	2944.0	
Grand								

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
Total	1067	301.7	1086.9	2320.2	3908.7	3788.4	3466.2	

The Obligated and Expended values reflect the Program Office records as of 28 Feb 93.

17. Production Rate Data:

a. Production Baseline Rate

Full Rate production approval for the Navigation Pods was given by the Defense Acquisition Board (DAB) at Milestone IIIB in Oct 86. The Targeting Pods initially met the Milestone III DAB in Sep 87. Final production approval was given by the DAB in Dec 88.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		26.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		6.2		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		13.7		N/A	N/A

17b. Production Rate Data (Cont'd):
There is no production scheduled for the LANTIRN program after FY91.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	12/12
Procurement	796/832

NOTE: The following is a breakout of the navigation/targeting pod deliveries as of 31 Dec 92.

DELIVERIES (PLAN/ACTUAL):	navigation pod	targeting pod
RDT&E:	6/6	6/6
Procurement:	561/561	235/271

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Current Estimate: Feb 85 Independent Cost Analysis (ICA).

This estimate documents those costs incurred in support of LANTIRN equipment after all weapon platforms have been modified and all group B kits are installed. Cost elements include Depot Maintenance, Second Destination Transportation, Unit Mission Personnel, Installation Support Personnel, Indirect Personnel Support, Personnel Acquisition and Training, Sustaining Investment, and Avionics Integration Support Facility (AISF). Unit level consumption was not calculated because it did not apply to this system since there will not be an increase in consumable supplies over what is already programmed for flightline maintenance.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Total Deliveries	Avg Annual Cost Per Antecedent
Depot Maintenance	1.7	N/A
Second Destination	0.2	N/A
Unit Mission Personnel	8.6	N/A
Installation Support Per	1.7	N/A
Indirect Personnel Supt	3.0	N/A
Personnel Acq & Training	3.7	N/A
Sustaining Investment	9.9	N/A
AISF	1.2	N/A
Total	30.0	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	23.7	3.5	3.3	12.4	42.9
INDUSTRIAL FUNDS	---	---	---	---	---
Total	23.7	3.5	3.3	12.4	42.9

Increase in FY93 and prior reflects additional funding received in FY92.

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OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: ADDS

AS OF DATE: December 31, 1992

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MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

21

1. Designation and Nomenclature (Preferred Name):
ARMY DATA DISTRIBUTION SYSTEM (EPLRS/JTIDS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PROJECT MANAGER ADDS
PEO - COMMUNICATIONS
ATTN: SFAE-CM-ADD
FORT MONMOUTH, NJ 07703-5216

COL JOHN D. HARTMAN
Assigned: January 6, 1993
AV 992-4251 COMM (908) 532-4251

4. Program Elements/Procurement Line Items:

RDT&E:
PE 63713 Project D370
PROCUREMENT:
APPN 2035 ICN BU1400 (Army)
APPN 2035 ICN BA9712* (Army)
APPN 2035 ICN BA9620 (Army) (Shared)
APPN 2035 ICN BA970A (Army) (Shared)
APPN 2035 ICN T01600 (Army) (Shared)
APPN 2035 ICN T03200 (Army) (Shared)
APPN 2035 ICN T06200 (Army)
APPN 2035 ICN T06400 (Army)

*BA9712 replaced BA9102.

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93 684

5. Related Programs:
Position Location Reporting System (PLRS), Joint Tactical Information Distribution System (JTIDS), and Army Tactical Command & Control System (ATCCS).

6. Mission and Description:
The Army Data Distribution System (ADDS) is a Command, Control and Communications (C3) network consisting of the Enhanced Position Location Reporting System (EPLRS) and the Army portion of the Joint Tactical Information Distribution (JTIDS). EPLRS is a direct outgrowth of the USMC PLRS and will provide Battlefield Commanders combat information on the position of their forces in addition to supporting the majority of the data needs of the multitude of computers to be fielded as part of the Army Tactical Command and Control System (ATCCS). JTIDS supports the unique data communications needs of very high volume users with inter-service requirements.

The EPLRS consists of a Net Control Station (NCS-E) which is used to manage up to 250 EPUUs. The Enhanced PLRS User Unit (EPUU) is a radio that can be configured as Manpack Unit (MPU), a Surface Vehicle Unit (SVU) and an Airborne Vehicle Unit (AVU). The Army portion of the JTIDS consists of a shelterized unit that is deployed as a Net Control Station-JTIDS (NCS-J) that manages other shelters that are employed as Dedicated JTIDS Relay Units (DJRUs). The JTIDS Class 2M Terminals are computerized radios which are integrated into host Army Air Defense Command and Control Systems to provide near real-time, high volume data communications.

7. Program Highlights:
a. Significant Historical Developments --
On 8 August 1979 the Under Secretary of Defense for Research and Engineering authorized the Army to proceed with development of the PLRS/JTIDS Hybrid (PJH) (now EPLRS). In July of 1980 the Training and Doctrine Command (TRADOC) approved an Operational and Organizational (O&O) Concept, which established PJH (now EPLRS) as a Division-based system and identified fielding requirements for sixteen (16) Army divisions. In September 1982, the Army System Acquisition Review Council (ASARC) approved PLRS production and endorsed the accelerated, overlapping five-phase development strategy for PJH (now EPLRS). In August 1984, TRADOC approved a revised O&O Plan which established PJH (now EPLRS) as a Corps-based system instead of a Division-based system and expanded the fielding requirement to eighteen (18) Divisions and five (5) Corps. In February 1985, the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD-C3I) approved the development of the downsized version of the JTIDS Terminal, the Class 2M. In March 1985, the Under Secretary of the Army approved continued development of the EPLRS. Concurrent approval was given

7a. Program Highlights (Cont'd):

for development of Very High Speed Integrated Circuit (VHSIC) technology in the Enhanced PLRS User Unit (EPUU), and downsizing of the Net Control Station (NCS). In the September to December 1985 timeframe, the Combined Arms Center (CAC) conducted the Battlefield Command and Control System Review (BC2SR). The BC2SR determined that the Army Air Defense community was the only user requiring JTIDS Terminals. On 7 October 1986, the Army approved a Required Operational (ROC) for ADDS. On 16 October 1986 a revised O&O Plan was approved by TRADOC for use in support of PJH (now EPLRS) system development and to supersede the PJH O&O Plan date 20 August 1984. In May 1988 Milestone IIIA for EPLRS Pre-Planned Product Improvement (P3I) was successfully completed. EPLRS Technical Test conducted January thru March 1989 revealed several system anomalies in software and hardware. A decision was made to minimize the government risk by restructuring the program to include correction of system deficiencies, removal of the concurrency in the schedule, and by limiting near term procurement quantities to units necessary for operational test only. On 22 August 1989 the rebaselined, restructured program was presented to the OSD C3I Committee chaired by the ASDC3I. The committee accepted the restructure and agreed that the Army should proceed. The EPLRS LRIP Basic contract was awarded in January 1990. Option 1 was exercised in July 1990. Due to Army Force structure changes, PM ADDS will support 12 Divisions/4 Corps rather than the 18 Divisions/5 Corps original requirement. During FY 91, funding reductions eliminated JTIDS Full Scale Production and deferred VHSIC Technology program. EPLRS Option 2 was exercised in January 1992. The Army planned to integrate the Very High Speed Integrated Circuit (VHSIC) into EPLRS Initial Full Scale Production in FY 95.

b. Significant Developments Since Last Report --
During FY 92, the Army JTIDS requirements were separated into Air-to-Ground and Ground-to-Ground data communications requirements. Funds were restored to procure 68 Class 2M Terminals for Air-to-Ground requirements only. Ground-to-Ground requirements are being validated and funding has not been identified. The Net Control Station - JTIDS (NCS-J) and Dedicated JTIDS Relay Unit (DJRU) systems are included in the Ground-to-Ground JTIDS requirements.
The EPLRS will be fielded to the Active Forces for 4 Divisions, 1 Corps, 1 Armored Cavalry Regiment (ACR) and 1 Corps Artillery; and the JTIDS will be fielded to the Active Forces as Air-to-Ground links only for 12 Divisions, 4 Corps, 2 ACRs, 4 Separates Brigades and 9 Patriot Battalions. The Army Theatre Missile Defense/Strategic Defense Initiative Office (ATMD/SDIO) have identified requirements for the JTIDS Class 2M Terminals, exact quantities and funding are to be determined at a later date. To support these future requirements, JTIDS will be seeking a Low Rate Initial Production decision at

ADDS, December 31, 1992

7b. Program Highlights (Cont'd):

Milestone IIIA.

The Army did not fund EPLRS production pending completion of a Combined Arms Center (CAC) review to determine Army data distribution needs. Upon completion of the review, the Army is planning to provide funding to support the fielding of the current EPLRS assets and any additional requirements for EPLRS.

The ADDS system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
In March 1993, the Office of the Secretary of Defense (OSD) decremented the JTIDS production program. The FY 94 President's Budget Future Years Defense Plan (FYDP) funds 65 JTIDS Class 2M Terminals.

JTIDS production schedule is based on the planned production of Army Theater Missile Defense/Strategic Defense Initiative Office (ATMD/SDIO) requirements. The production program is predicated upon SDIO validated requirements and funding.

8. Threshold Breaches:
There are Schedule Milestone breaches to the current Acquisition Program Baseline (APB) (8 March 91) and a Program Acquisition Unit Cost (PAUC) Nunn-McCurdy breach.

9. Schedule:

a. Milestones --

	Planning Estimate	Approved Program	Current Estimate
Enhanced Position Location Reporting System (EPLRS)			
Required Operational Capability Approval	JUL 84	SEP 86	SEP 86
P3I Phase A Software Contract Award	SEP 86	FEB 88	FEB 88
Milestone IIIA	SEP 87	MAY 88	MAY 88
Technical Test Start	AUG 87	MAY 88	MAY 88
P3I Phase B Hardware/Firmware Contract Award	N/A	JUN 88	JUN 88
Technical Test Phase 2	N/A	MAR 89	MAR 89
Prod System Verification Award	N/A	SEP 89	SEP 89
P3I Phase C Basic Award	N/A	JAN 90	JAN 90
Prod System Verification Demo	N/A	MAY 90	MAY 90

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
P3I Phase C Option 1 Award	N/A	JUL 90	JUL 90
P3I Phase C Option 2 Award	N/A	N/A	JAN 92
P3I First Prod Delivery	N/A	JUL 92	SEP 92(Ch-1)
P3I Phase C Option 3 Award	N/A	N/A	MAY 93(Ch-2)
Technical Test III			
Start	N/A	MAY 93	MAY 93
Complete	N/A	JUL 93	JUL 93
Operation Test & Eval	AUG 87	APR 94	MAY 94(Ch-3)
Organic Support Capability	N/A	N/A	MAY 94(Ch-4)
Service Depot Support	N/A	N/A	MAY 94(Ch-4)
P3I First Unit Equipped (Conditional)	N/A	MAY 94	JUN 94(Ch-3)
Milestone IIIB	N/A	SEP 94	N/A (Ch-5)
Full Scale Production Contract Award	JUL 88	N/A	N/A
P3I First Unit Equipped (FUE)	SEP 88	N/A	N/A
Production Award	N/A	NOV 94	N/A (Ch-5)
First Full Rate Production Delivery	N/A	NOV 96	N/A (Ch-5)
IOC 1/	N/A	FEB 97	N/A (Ch-5)
Follow-on Test & Eval	N/A	AUG 97	N/A (Ch-5)
Joint Tactical Information Distribution System (JTIDS)			
Technical Test			
Start	N/A	JUN 90	JUN 90
Complete	N/A	DEC 90	MAR 91
Operational Test & Eval			
Complete	N/A	JUN 91	N/A
System Tech Test/Initial Op Assessment 2/			
Start	N/A	OCT 91	OCT 91
Complete	N/A	MAY 92	SEP 92(Ch-6)
Limited User Test/Initial Operational Assessment			
Start	N/A	N/A	AUG 93(Ch-7)
Complete	N/A	N/A	JAN 94(Ch-7)
Milestone III	N/A	SEP 93	N/A (Ch-8)
First Unit Equipped 1/	N/A	SEP 93	N/A (Ch-9)
First Unit Equipped (Interim)	N/A	N/A	SEP 93(Ch-9)
Milestone IIIA (Class 2M only)	N/A	N/A	FEB 94(Ch-8)
Low Rate Initial Production Award	N/A	N/A	NOV 94(Ch-7)
Initial Operational Test & Evaluation			
Start	N/A	N/A	JAN 96(Ch-7)

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
Complete	N/A	N/A	MAR 96(Ch-7)
Low Rate Initial Production Delivery	N/A	N/A	SEP 96(Ch-7)
Organic Support Capability	N/A	N/A	SEP 96(Ch-4)
Service Depot Support	N/A	N/A	SEP 96(Ch-4)
Milestone IIIB	N/A	N/A	SEP 97(Ch-8)
Production Award	N/A	DEC 93	NOV 97(Ch-8)
Production Delivery	N/A	JUN 96	MAY 99(Ch-8)
IOC	N/A	FEB 98	FEB 98

1/ Research and development assets for JTIDS only.

2/ Consists of the JTIDS Class 2M Terminal and the Net Control Station - JTIDS/Dedicated JTIDS Relay Unit. As JTIDS will undergo an LUT/IOA in FY 93-94, Operational Test and Evaluation Command (OPTEC) decided to forego the Initial Operational Assessment (IOA) in FY 92. Only System Technical Test was completed in September 1992.

b. Previous Change Explanations --

All PLRS and EPLRS historical milestones not in the ADDS Acquisition Program Baseline (APB) have been deleted. The P3I contract is shown in Phases A, B, and C. Dates for OT&E and all subsequent milestones directly related to them changed because of complications with the completion of Technical Test (TT). EPLRS Milestone IIIA occurred MAY 88 versus APR 88. EPLRS Milestone IIIB was an added milestone to occur in MAY 93. JTIDS milestones have been added because the ADDS system includes both EPLRS and JTIDS. EPLRS TT conducted JAN - MAR 1989 revealed several system anomalies in software and hardware. A program rebaselining effort was undertaken to include correction of system deficiencies, removal of the concurrency in this highly accelerated program schedule, and reduction of the near term procurement quantities to units necessary for operational test only. System anomalies revealed during EPLRS TT, funding decrements, and the delayed award of Phase C have caused a complete program restructure. The restructure caused the following changes to schedule milestones: P3I First Production Delivery changed from JUN 91 to JUL 92, Operational Test and Evaluation (OT&E) changed from APR 90 to APR 94, Milestone IIIB changed from SEP 90 to SEP 94, and First Production Delivery will occur in FEB 93 versus OCT 91. Based upon successful EPLRS Production System Verification (PSV) testing, and recommendations by the test community, EPLRS Technical Test Phase 3 was eliminated. EPLRS Technical Test III to start in MAY 93 and complete in JUL 93 were added to more accurately reflect the existing

9b. Schedule (Cont'd):
EPLRS test schedule. EPLRS Follow-On Test & Evaluation was changed from NOV 95 to AUG 97 based upon the recommendation of the TIWG to conduct the test when production assets are available. EPLRS First Unit Equipped (FUE) was changed to Initial Operational Capability (IOC). EPLRS and JTIDS IOC are added milestones. JTIDS Technical Test Complete was changed from DEC 90 to MAR 91 due to non-availability of required quantity of Class 2M Terminals needed for testing. JTIDS Operational Test & Evaluation - Start and End were changed to System Technical Test/Initial Operation Assessment (TT/IOA) Start and Complete to allow a greater system test in accordance with the testers' desires. The test consisted of the JTIDS CL2M Terminal and the Net Control Station-JTIDS and the Dedicated Relay Unit (NCS-J/DJRU). JTIDS Milestone III and First Unit Equipped (FUE) were changed to SEP 93 because funding did not support FY 92 or FY 93 production decision/award. JTIDS Full Scale Production was changed to Production Award and First Production Delivery was changed to Production Delivery. P3I Phase C Option 2 Award milestone was reinstated. Funding of $27M was received to award EPLRS Option 2 in JAN 92.

c. Current Change Explanations --

(Ch-1) Extension of the reliability growth program has caused the delay of this milestone from JUL 92 to SEP 92.
(Ch-2) Additional milestone. Funding of $29M has been received to exercise EPLRS Option 3 in MAY 93.
(Ch-3) Non-availability of test site until MAY 94 caused one month delay in these milestones: Operational Test & Evaluation from April 94 to MAY 94 and P3I First Unit Equipped (Conditional) from MAY 94 to JUN 94.
(Ch-4) These added milestones are mandatory requirements.
(Ch-5) Further EPLRS production is not planned, therefore, EPLRS Milestone IIIB, Production Award, First Full Rate Production Delivery, IOC and FOT&E are not applicable. An EPLRS fielding decision/material release will be sought in SEP 94.
(Ch-6) The NCS-J/DJRU software Test-Analyze-and-Fix (TAAF) program delayed the completion of System Technical Test from MAY 92 to SEP 92.
(Ch-7) Additional milestones have been included as a result of the JTIDS program restructure: A Limited User Test/Initial Operational Assessment (LUT/IOA) will be conducted in AUG 93 through JAN 94 with Research and Development assets allowing for a Low Rate Initial Production (LRIP) decision at Milestone IIIA. A LRIP Award will occur in NOV 94. Initial Operational Test and Evaluation (IOT&E) will occur in JAN 96 through MAR 96 with production representative assets procured through the Joint Program Office (JPO). LRIP Delivery will start in SEP 96.
(Ch-8) The Army Theatre Missile Defense/Strategic Defense Initiative

9c. Schedule (Cont'd):
Office have identified requirements for the JTIDS Class 2M Terminals, exact quantities and funding are to be determined at a later date. To support these future requirements, JTIDS Milestone III has been changed to Milestone IIIA (CL2M only). Milestone IIIB will occur in SEP 97. Production Award was changed from DEC 93 to NOV 97 and Production Delivery was changed from JUN 96 to MAY 99, these changes are predicated upon SDIO validated requirements and funding. (Ch-9) JTIDS First Unit Equipped has been changed to First Unit Equipped (Interim). Research and Development assets will be replaced with LRIP assets when available.

d. References --

Planning Estimate:
SDDM, dated 8 August 1979.

Approved Program:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Mean Time Between Failure (lower limit/confidence level)(hrs)				
NCS-E	100	125(80%) / 100(80%)	130(80%)	125(80%)
EPUU	500	700(80%) / 500(80%)	1671 (80%)	500(80%)
JTIDS Class 2M Terminal	120	400(70%) / 400(70%)	548(80%)	400(80%)
Mean Time to Repair (unit level)(min)				
NCS-E	30	30 / 30	30	30
EPUU	30	15 / 15	15	15
JTIDS Class 2M Terminal	30	30 / 30	30	30
Size (LxWxH)				
NCS-E Shelter-280C (ft)	12x7.3x7	12x7.3x7 / 12x7.3x7	12x7.3x7	12x7.3x7
Downsized NCS-E Shelter-250C (ft)	7x6.5x6	N/A	N/A	N/A
EPUU (in)	10.1x 10.7x4	14.7x 10.5x5.1 / 14.7x 10.5x5.1	14.7x 10.5x5.1	14.7x 10.5x5.1

10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
JTIDS Class 2M Terminal (in)	N/A	25x15x10	/ 25x15x10	25x15x10	25x15x10
Weight (upper limit) (lbs) 1/					
NCS-E Shelter-280C	6200	6300	/ 6300	6300	6300
Downsized NCS-E Shelter-250C	2300	N/A		N/A	N/A
EPUU/Manpack 2/	17	28	/ 28	28	28
JTIDS Class 2M Terminal	N/A	88	/ 94	94	94
Power Requirements					
NCS-E Voltage (AC)	115-208	115-208	/ 115-208	115-208	115-208
NCS-E Frequency (Hz)	50-60	60	/ 60	60	60
EPUU Voltage (DC)	20-28	20-28	/ 20-28	20-28	20-28
JTIDS Voltage (DC)	22-28	22-28	/ 22-28	22-28	22-28
Channels					
EPUU	8	8	/ 8	8	8
JTIDS Class 2M Terminal	128	51	/ 51	51	51
Frequency Band (MHz)					
NCS-E	420-450	420-450	/ 420-450	420-450	420-450
EPUU	420-450	420-450	/ 420-450	420-450	420-450
JTIDS Class 2M Terminal	960-1215	960-1215	/ 960-1215	960-1215	960-1215
Message Length (bits)- Speed of Service (secs) for selected users	80-4	80-4	/ 80-4	80-4	80-4

1/ Weight does not include the Interface Control Panel and Interconnecting Cables.

2/ EPUU/Manpack configuration includes an EPUU, User Read Out, cable assembly, two BA5590 batteries, battery box and antenna.

b. Previous Change Explanations --

MTBF for JTIDS Class 2M Terminal Current Estimate reflects contractual requirements. Mean-Time-To-Repair (MTTR) changed to reflect consistency with performance characteristics in the NCS-E System Segment Specification and the ADDS ROC. JTIDS Class 2M Terminal Voltage is DC versus AC. Frequency requirements are grouped separately to more accurately reflect technical characteristics. The

10b. Performance Characteristics (Cont'd):
JTIDS Class 2M Terminal size was changed based on 27 May 88 system specification. The power requirement for the NCS-E is 60 Hz. The MTTR for the EPUU is 15 minutes. The JTIDS Class 2M Terminal development contract specifies frequency hopping-51 frequencies, 3 MHZ band width and a non-nodal network management capability of 128 net capacity. The user has stated through the Program Deviation Review Panel that a reduction in the NCS-E MTBF from 186 to 125 hours is acceptable for interim field use. An NCS-E modernization (downsizing) project is planned to run parallel with P3I to provide for higher reliability and to meet other Required Operational Capability (ROC) requirements that the current NCS-E does not meet. The width of the EPUU has not changed. The EPUU uses the same housing unit as the PLRS Basic User Unit (BUU). The dimensions of the BUU (width 10.5 inches) have not changed since the PLRS contract award in 1983. The ADDS ROC, published in Oct 1986 incorrectly stated the width of the EPUU as 10.2 inches. The JTIDS Class 2M Terminal weight changed from 88 to 94 lbs. The user has stated that the 94 lb. weight of the JTIDS EDM Terminal is acceptable for operational use.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
SDDM, dated 8 August 1979.

Approved Program:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	175.3	286.0	275.6
Procurement	1806.2	1318.1	434.6
NCS	(229.7)		(105.2)
Other Components	(1270.6)		(264.4)
Total Flyaway	(1500.3)		(369.6)
Other Weapon Systems	(121.3)		(47.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(184.6)		(17.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year $	1981.5	1604.1	710.2

11a. Total Program Cost and Quantity (Cont'd):

	Planning Estimate	Approved Program	Current Estimate
Escalation	1056.7	1248.9	205.1
Development (RDT&E)	(13.7)	(51.9)	(42.7)
Procurement	(1043.0)	(1197.0)	(162.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3038.2	2853.0	915.3
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	85	108	14
Total	85	108	14

Excludes three (3) RTD&E units that are not considered fully configured end items.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
SDDM, dated 8 August 1979.

Approved Program:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	915.3	2691.3	915.3
(2) Quantity	14	102	14
(3) Unit Cost	65.379	26.385	65.379

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	54.8	54.8	25.4
Less CY Adv Proc	0.0	0.0	0.0
Plus FY Adv Proc	0.0	0.0	0.0
Net Total	54.8	54.8	25.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Program Acquisition Quantity - Due to the many components of the ADDS, a representative network consisting of one Net Control Station - EPLRS (NCS-E) and associated EPLRS User Units (EPUUs) and Joint Tactical Information Distribution System (JTIDS) Class 2M Terminals are used as the unit of measure for the PAQ. Significant funding reductions to the ADDS program have reduced the number of representative networks from 102 to 14. This has changed the composition of the representative network from 1 NCS-E, 109 EPUUs, and .2 JTIDS Class 2M Terminals to 1 NCS-E, 129 EPUUs, and 5 JTIDS Class 2M Terminals.

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY83$)	710.2	1588.0	710.2
(2) Unit Cost	50.729	15.569	50.729

d. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY83$)	37.7	37.7	17.2
Less CY Adv Proc	0.0	0.0	0.0
Plus FY Adv Proc	0.0	0.0	0.0
Net Total	37.7	37.7	17.2
(2) Unit Cost	N/A	N/A	N/A

e. Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	38.994	147.79
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-88	-86.27
(4) PAUC (BY83$)	35.160	225.83
(5) CPUC (BY83$)	0.000	N/A

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	35.258	117.05
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-88	-86.27
(4) PAUC (BY83$)	32.945	185.25
(5) CPUC (BY83$)	0.000	N/A

g. Initial SAR (DEC 83)

(1) Program Acquisition Cost (TY$) -- 3038.2
(2) Program Acquisition Cost (BY$) -- 1981.5

h. Unit Cost Changes.

(1) PAUC --

The change in the PAUC is a result of a decrease in the number of representative Units of Measure from 102 to 14 NCS-E. The decrease was caused by the Army's decision to eliminate procurement funding in FY 96 and out, pending completion of a Combined Arms Center (CAC) review to determine data distribution needs. Upon completion of the study, the Army is expected to provide funding to support the fielding of current assets and any additional requirements.

(2) CPUC --

No CPUC exists for this program.

i. Impact of Performance or Schedule Changes on Unit Cost.

Performance or Schedule milestone changes had no impact on the Unit Cost. The Army decision to eliminate procurement funding and quantities in FY 96 and beyond caused the change in the PAUC.

j. Program Management and Control.

Program Executive Officer - BG David R. Gust
Deputy Program Executive Officer - Mr. Neal W. Atkinson

k. Cost Control Actions.

As the PAUC change was not caused by lack of PM cost controls, on going cost control procedures will continue.

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

l. Contract Information (In Millions of Then-Year Dollars) --

(1) Contractor(s): HUGHES AIRCRAFT COMPANY
(2) Contract Title: EPLRS LRIP
(3) Contract Number:DAAB07-83-C-J031
(4) Actual Cost of Work Performed (ACWP) to date: 135.2
(5) Percent contract completed (BCWP/target cost): 70.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$+3.5/N/A	$-3.1/N/A
Previous SAR	$+3.5/N/A	$-3.1/N/A
Current values	$+4.5/0.00%	$-6.7/0.00%
Change from the baseline SAR	$+1.0/N/A	$-3.6/N/A
Change from the previous SAR	$+1.0/N/A	$-3.6/N/A

(7) Explanation of Variances. -

The contract Cost Variance is favorable. The Schedule Variance was caused by a delay in deliveries due to produceability/reliability fixes and quality problems. All issues have been resolved, deliveries have resumed and quantities available will support Technical Test (TT).

(8) Impact of Variances on Contract. -

Negative Schedule Variance insignificant. No impact on contract.

(9) Impact of Variances on Unit Costs. -

Unit Cost not impacted by negative Schedule Variance.

m. Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	189.0	2849.2	0.0	3038.2
Previous Changes:				
Economic	-6.0	-269.4	-	-275.4
Quantity	-	-677.0	-	-677.0
Schedule	+38.0	+428.5	-	+466.5
Engineering	+139.5	-510.3	-	-370.8
Estimating	-18.6	+581.0	-	+562.4
Other	-	-	-	-
Support	-	-52.6	-	-52.6
Subtotal	+152.9	-499.8	-	-346.9
Current Changes:				
Economic	-1.9	+16.4	-	+14.5
Quantity	-	-1442.6	-	-1442.6
Schedule	-	-6.7	-	-6.7
Engineering	-21.0	-	-	-21.0
Estimating	-0.7	+1.5	-	+0.8
Other	-	-	-	-
Support	-	-321.0	-	-321.0
Subtotal	-23.6	-1752.4	-	-1776.0
Total Changes	+129.3	-2252.2	-	-2122.9
Current Estimate	318.3	597.0	-	915.3

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	175.3	1806.2	0.0	1981.5
Previous Changes:				
Quantity	-	-414.5	-	-414.5
Schedule	+26.0	-5.9	-	+20.1
Engineering	+104.8	-369.0	-	-264.2
Estimating	-16.1	+371.0	-	+354.9
Other	-	-	-	-
Support	-	-89.8	-	-89.8
Subtotal	+114.7	-508.2	-	-393.5
Current Changes:				
Quantity	-	-723.2	-	-723.2
Schedule	-	-	-	-
Engineering	-14.0	-	-	-14.0
Estimating	-0.4	+10.9	-	+10.5
Other	-	-	-	-
Support	-	-151.1	-	-151.1
Subtotal	-14.4	-863.4	-	-877.8
Total Changes	+100.3	-1371.6	-	-1271.3
Current Estimate	275.6	434.6	-	710.2

b. Previous Change Explanations --

RDT&E

Economic: Revised Escalation Indices.

Schedule: Schedule stretchout was due to Technical Test Extension.

Engineering: New work - 1553 interface, Continuity of Operations, Dedicated JTIDS Relay Unit (DJRU), Intermediate Forward Test Equipment and DATABASE Command and Control. ADA software Conversion for NCS-E Downsizing, GFE for Standard Integrated Command Post - (SICP) for NCS-J. The NCS-E did not meet the MTBF in the ROC or air transportability requirement. Downsizing of the NCS-E was required which utilizes a smaller shelter and current

13b. Cost Variance Analysis (Cont'd):

computer technology using the ADA language.

Estimating: These dollars were included in both ADDS and JTIDS SARs. Additional funds needed for Phase 5 contract award. Adjusted prior year allocations to reflect actual program. Adjusted BY dollars for FY 81-89 in the December 89 SAR. Refined NCS-E Downsizing estimate and included USMC cost sharing. Adjusted prior year allocations to reflect actual program. Current & prior Inflation Offset.

Procurement

Economic: Revised Escalation Indices.

Quantity: Changed NCS-E quantity from 4 per Division to 5 and from 6 per Corps to 8. Changed EPUU quantity from 24,875 in the previous SAR to 22,103 and NCS-E quantity was reduced from 140 to 123. Changed EPUU quantity from 22,103 to 14,518. Due to changes in the Army Force structure and funding adjustments, the following quantities have changed in Dec 90 SAR: NCS-E from 120 to 108, EPUU from 14518 to 12022, and JTIDS CL2M Terminals from 586 to 23. Force structure change and funding adjustments, quantities changed: NCS-E to 102; EPUU to 11152; JTIDS to 20.

Schedule: Schedule stretchout due to funding decrements. Program extended to meet user's equipment requirements. Quantity reductions and changes in production rates compressed the program to complete in FY2008 vs FY2011.

Engineering: Changed due to NCS-E downsizing and to JTIDS Class 2M being substituted for Class 2 Terminal; eliminated PLRS Steerable Null Antenna Processor (PSNAP); removed the JTIDS CL2 Terminal and PSNAP from NCS-E. Added PM checktest to be conducted prior to Technical Test. Added testing and Manprint improvements which are required for the EPLRS restructured program. Budget cuts eliminated VHSIC effort.

Estimating: Estimating error in calculating the first unit cost in Dec 85 and Sep 86 SARs. Interface Unit was erroneously omitted from Dec 85 SAR. Changed acquisition strategy for EPUUs to single source. Spares cost was increased due to increase in operating tempo from 300 hours to 1300 hours EPUU. Changed acquisition strategy for the JTIDS Class 2M Terminal from single source to Leader/Follower. Increased Post Deployment Software Support due to a change in data base used for the estimating model.

13b. Cost Variance Analysis (Cont'd):

Shifted years of procurement of Initial Spares (support). Adjusted computation of BY dollars for FY 86-88 in the Dec 89 SAR. Newly developed First Unit Cost for JTIDS CL2M Terminal was used. Corrected previous cost variance changes miscategorization. Estimating error in learning curve slope in previous SARs. Corrected previous cost variance changes miscategorization. Current and prior Inflation Offset.

Support: Reduced Initial Spares due to quantity reductions. Spares and Other Weapon Systems Costs were changed to reflect new quantities. Adjusted Total Package Fielding Cost and New Equipment Training (NET) for FY 98 - FY 11. Increased due to transfer of funds from OMA to OPA for PM salaries and operating costs (travel, training, equipment, supplies, etc.). Corrected previous cost variance changes miscategorization. Changed Spares due to new quantities, new method of calculation and addition of surcharge. Adjusted the Total Package Fielding.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Escalation Indices (Economic)		-1.9
Planned engineering efforts were eliminated due to funding reductions. (Engineering)	-14.0	-21.0
Continued refinement of NCS-E downsizing estimate. (Estimating)	-0.7	-1.0
Adjust error in calculating BY 83 dollars in Dec 91 SAR submission. (Estimating)	+0.1	--
Prior and current inflation offset. (Estimating)	+0.2	+0.3
RDT&E Subtotal	-14.4	-23.6
(2) Procurement		
Revised Escalation Indices. (Economic)	--	-209.7
Economic Adjustment for Negative Program Change. (Economic)	--	+226.1
NCS-E's quantity decreased from 102 to 14. (Quantity)	-81.1	-159.0

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13c. **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
EPUU's quantity decreased from 11,152 to 1,808. (Quantity)	-677.3	-1339.1
JTIDS CL2M's quantity increased from 20 to 65. (Quantity)	+35.2	+55.5
NCS-E will be procured in FY 95 instead of FY 94. (Schedule)	--	-0.8
EPUU will be procured in FY 93 instead of FY 95. (Schedule)	--	-6.8
JTIDS CL2M will be procured in FY 95 instead of FY 94. (Schedule)	--	+0.9
Prior and current inflation offset. (Estimating)	+1.1	+1.5
Correction to BY 83 dollars in Dec 91 SAR submission. (Estimating)	+9.8	--
Revised Initial Spares estimate based on reduced quantities. (Support)	-88.4	-187.7
Revised Other Weapon System estimate based on reduced quantities. (Support)	-63.0	-133.7
Prior and current inflation offset. (Support)	+0.3	+0.4
Procurement Subtotal	-863.4	-1752.4

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
35.74	-18.64	29.87	32.84	-27.99	40.23	--	-26.69	29.62	65.38

15. **Contract Information** (Then-Year Dollars in Millions):

a. Procurement --

EPLRS LRIP:	Initial Contract Price Target	Ceiling	Qty
HUGHES AIRCRAFT COMPANY, FULLERTON, CA DAAB07-83-C-J031, FPIF Award: February 1, 1988 Definitized: February 1, 1988	$2.7	$3.1	0

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$235.0	$265.3	8	$201.1	$201.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$3.5	$-3.1
Cumulative Variances To Date (12/21/92)	$4.5	$-6.7
Net Change	$1.0	$-3.6

Explanation of Change:

The $1.0M positive change in the Cost Variance is a result of the continued intensive management effort by PM ADDS and Hughes Aircraft Company to control and monitor the EPLRS LRIP contract.

The $3.6M negative change in the Schedule Variance was caused by the redesign of postern LSI chips and quality issues that precluded on-time deliveries of EPLRS radio sets. All issues have been resolved and deliveries have resumed to support Technical Test (TT).

"Initial Contract Price" refers to Phase A only.

"Current Contract Price" refers to Phase A, B, and C.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 65.0% (13 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 77.3% ($707.7 / $915.3)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	304.3	11.8	2.2	-	318.3
Procurement	403.4	25.4	105.3	62.9	597.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	707.7	37.2	107.5	62.9	915.3

PM ADDS requires a total of $49.1M over Fiscal Years 96-99 to field current assets. The Army intends to provide this funding in the years required. Resources to be documented in the FY 96-01 POM.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army								
1981				17.1	15.8	15.8	15.8	10.6
1982				17.6	17.3	17.3	17.3	7.6
1983				33.3	34.1	34.1	34.1	4.9
1984				21.6	22.9	22.9	22.9	3.8
1985				21.8	23.9	23.9	23.9	3.4
1986				31.9	36.0	36.0	36.0	2.8
1987				36.8	42.6	42.6	42.6	2.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1988				21.3	25.6	25.6	25.5	3.0
1989				15.6	19.5	19.5	18.4	4.2
1990				11.8	15.3	15.3	14.0	4.0
1991				11.6	15.6	15.6	15.0	4.3
1992				16.6	23.0	23.0	13.9	2.8
1993				9.0	12.7	4.6	0.2	2.4
1994				8.1	11.8			2.4
1995				1.5	2.2			2.3
Subtot				275.6	318.3	296.2	279.6	
Appropriation: 2035 Other Procurement, Army								
1986		3.0	5.8	18.0	21.1	21.1	21.1	2.8
1987		15.9	33.4	60.6	73.5	73.5	69.1	2.7
1988	4	20.6	64.2	93.5	118.8	118.7	60.6	3.0
1989	4	6.8	52.1	62.7	82.0	82.0	62.1	4.2
1990								
1991			6.4	6.4	8.9	8.9	7.5	4.3
1992			30.0	31.2	44.3	43.9	26.2	2.8

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1993		0.5	34.2	37.7	54.8	9.9	0.2	2.4
1994		0.5	12.0	17.2	25.4			2.4
1995	6	6.8	55.1	69.6	105.3			2.3
1996				2.7	4.2			2.3
1997				1.7	2.7			2.2
1998				2.3	3.7			2.2
1999								2.2
2000		0.5	21.8	31.0	52.3			2.2
Subtot	14	54.6	315.0	434.6	597.0	358.0	246.8	
Grand Total	14	54.6	315.0	710.2	915.3	654.2	526.4	

Flyaway Costs are reported by year based on procuring the many components of the ADDS, not just the unit of measure (See Section 12b).

17. Production Rate Data:

a. Production Baseline Rate

As a result of an Army decision to eliminate EPLRS procurement funding until after a Combined Arms Center (CAC) review of data distribution requirements, there is currently no funded Full Rate Production.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	25.4	0.0	-25.4	-25.4
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	105.3	0.0	-105.3	-105.3
Procurement Qty	6	6	6	0	0
Proc. Unit Cost	0.000	17.550	0.000	-17.550	-17.550
Balance of Proc. (FY 1996 to Complete)	0.0	62.9	0.0	-62.9	-62.9

The ADDS program is in LRIP. There is currently no "Minimum Sustaining" and "Maximum Economic" rate since EPLRS does not have a funded Full Rate Production program.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	3/3
Procurement	6/5

d. Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 140 - @ Peak Rate: 0.0/mo			
FY 83 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000
@ Qty 4 (1st three years) - @ Peak Rate: 0.0/mo			
FY 83 Base-Year $	0.000	0.000	0.000
Then Year $	0.000	0.000	0.000

18. Operating and Support Costs:

18a. Operating and Support Costs (Cont'd):

a. Assumptions and Ground Rules --

The ADDS system definition for unit equivalent is 14 units based on the quantity of Net Control Stations-EPLRS (NCS-E) to be deployed for Division/Corps complements. The operating hours for the system is given as 20-24 hrs/day. Uniform costs are assumed over a 20 year period. Cost categories are given in the table 18b. Personnel reflect the costs to support the operation and maintenance personnel. The Spares and Parts reflects the costs of replenishment spares, repair parts and modifications/kits. The source of the cost estimate is the ADDS Baseline Cost Estimate, July 1991. There is no antecedent system for ADDS.

b. Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per NCS-E	Avg Annual Cost Per NCS-E (Antecedent)
Personnel	0.3	N/A
POL	0.0	N/A
Direct Depot Maintenance	0.0	N/A
Spares/Parts/Mod Kits	0.6	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	0.0	N/A
Total	0.9	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	---	0.6	1.5	8.1	10.2
Total	---	0.6	1.5	8.1	10.2

N-28 MK 50 TORPEDO

2-135

~~*** SECRET ***~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MK 50 TORPEDO

AS OF DATE: December 31, 1992

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AS AMENDED
MAY 28 1993 2
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):**
   Torpedo, MK 50 (MK 50 Torpedo)

2. (U) **DoD Component:** Navy

3. (U) **Responsible Office and Telephone Number:**
   MK 50 TORPEDO PROGRAM OFFICE
   PEO, UNDERSEA WARFARE
   PMO 406 Crystal Park One, Room 1102
   WASHINGTON, DC 20362-5101

   SES Mr.T.E. Douglass
   Assigned: May 12, 1989
   AV 744-3020 COMM (703) 746-3020

4. (U) **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0604610N Project V0199
   PE 0603610N Project S1873, V1873
   PROCUREMENT:
   APPN 1507 ICN 3118 (Navy)
   MILCON:
   PE 0702096N

No Security Objection to Open Publication
(AS AMENDED)
93-C-0464
MAY 28 1993
Office of the Chief of
Naval Operations Dept. of the Navy

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~~Downgrade Instructions: OADR~~

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OASD/PA DEC/93 93-723

5. (U) Related Programs:
LAMPS MK III; CV HELO; P-3C; SH-2F; ASW Ship In-Service Programs.

6. (U) Mission and Description:
- The MK 50 TORPEDO is providing the fleet with a lightweight torpedo for air and surface delivery to combat all current and projected submarine threats.

- The MK 50 TORPEDO has superior performance (speed, depth, endurance, detection range, and warhead) characteristics capable of countering the ALFA, OSCAR, TYPHOON, and follow-on submarine classes. The MK 50 also has greater capability in the evolving shallow water, littoral warfare threat environment and has the potential for significant performance enhancements in the adverse acoustic conditions encountered in these scenarios.

- Improved Russian submarine performance and countermeasure capability as well as the evolving threat from the rest of the world necessitate having an advanced anti-submarine warfare torpedo available as a replacement for the lightweight MK 46 TORPEDO.

- The MK 50 TORPEDO is made up of several major subsystems which include: a sonar for target detection and classification, a command and control unit for interpreting information received from the sonar to guide the torpedo to its target, an advanced warhead and a closed cycle, stored chemical energy propulsion system.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The MK 50 program started with a technology assessment phase in 1975 to review various conceptual designs from industry. DSARC I was held in July 1979 and an Advanced Development began with two competitive designs. In January 1981, competition was terminated and Honeywell was selected as the single remaining D&V contractor. The D&V phase was completed and a DSARC milestone II review on January 20, 1984 approved proceeding into Full Scale Development (FSD). FSD proceeded with in-water testing and fabrication of the first fleet prototypes. Warhead lethality tests were continued and the warhead design was finalized. In 1987 the program was restructured and the FSD phase was extended by 21 months. Sea run tests using all launch platforms have demonstrated prototype lot torpedo technical performance and have provided initial tactical evaluation. COMOPTEVFOR conducted independent testing (OT-IIA) and concluded that the MK 50 had the potential to be operationally suitable and effective. In FY 87 a second source qualification contract was awarded to Westinghouse Electric Corporation. In May, 1989 Milestone IIIA approval was granted and the torpedo entered Low Rate Initial Production (LRIP). TECHEVAL was completed in June 1990. OPEVAL started in July 1990 with

7a. (U) Program Highlights (Cont'd):

the first of a series of 158 planned test firings, and was scheduled to end in June 1991. In October 1990, Honeywell spun off its defense and marine systems business units and a wholly independent company, Alliant Techsystems, Inc., was formed. The FY 91 contracts were competitively awarded to Westinghouse Electric Corporation (165 torpedoes) and Alliant Techsystems, Inc. (100 torpedoes) in February 1991. This was the first competition between the two contractors and the first year of Firm Fixed Price contracts. At this time there were a total of 615 torpedoes under contract, including 10 qualification torpedoes produced by Westinghouse. COMOPTEVFOR halted OPEVAL and placed MK 50 in deficiency status in June of 1991. The torpedo underwent additional software development and significant testing under strict PEO control. Corrective action was completed and successfully demonstrated in-water in December of 1991. The total of runs completed was 174, up from the 158 planned runs with the increase due to faulty range test equipment during some of the original testing.

b. (U) Significant Developments Since Last Report --
After extensive testing of the revised software, PEO-SSAS (now PEO-USW) recertified the MK 50 for OPEVAL Phase II on 7 January 1992. Testing resumed immediately and an additional 25 runs were conducted. OPEVAL testing was successfully completed in June of 1992 and the final OPEVAL report was issued in August of that year. The torpedo was approved for fleet introduction on 27 October 1992 and entered fleet service with the first deliveries of torpedoes to fleet storage and issue (S&I) sites. The FY 92 procurement was awarded on a fully competitive basis to Alliant Techsystems in November 92. This was a winner-take-all award. The FY 93 contract will be awarded in a competition between Alliant and Westinghouse and will also be on a winner-take-all basis.

c. (U) Changes Since As Of Date --
A Milestone IIIB review by the Defense Acquisition Board (DAB) was planned for the spring of 1993 however, the budgetary decision to terminate the production program has lead USD(A) to revise the requirement for a MSIIIB DAB. The plan now calls for award of the FY 93 contract under an extension of original LRIP authority granted at MSIIIA.

8. (U) Threshold Breaches:
There is a technical breach against the Acquisition Program Baseline (APB 8 March 91) maintenance turnaround goal and objective. The breach consists of a difference in measuring IMA performance in that the original specification was a measure of "wrench-on" time only and not total system performance. A Program Deviation Report/Baseline Change Request (PDR/BCR), was submitted on 14 January 1992, proposing

8. (U) Threshold Breaches (Cont'd):

the addition of a new parameter to the APB since the original parameter (wrench-on time) is not normally measured. This breach will not cause any problems in the ability of the fleet IMAs to effectively support maintenance requirements. There is also a breach of the Milestone IIIB schedule in that the delay from the approved date of September 1991 to the planned date of August 1992 exceeds 180 days. This breach was also covered in the PDR/BCR addressed above. The PDR/BCR was returned by OSD staff without action due to the delay in completing OPEVAL and the associated difficulty in establishing achievable schedule dates. A new PDR/BCR was submitted reporting these APB breaches.

Reevaluation of requirements versus available funding resulted in the termination of the MK 50 Torpedo production program. The result of the dramatic reduction in production quantities is a breach of the Nunn-McCurdy Program Acquisition Unit Cost (PAUC) threshold. Section 12 of this report provides Nunn-McCurdy unit cost breach information.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
(U)(C)Milestone I (DSARC I)	JUL 79	JUL 79	JUL 79
(U)(C)D&V Contract Award	N/A	AUG 79	JUL 79
(U)(C)DT/OT-I Completed	N/A	JUL 83	JUL 83
(U)(C)Milestone II (DSARC II)	DEC 83	JAN 84	JAN 84
(U)(C)FSD Contract Award	AUG 83	SEP 83	SEP 83
(U)(C)Critical Design Review	APR 86	MAY 88	MAY 88
(U)(C)Milestone III A (DAB)	OCT 86	FEB 89	MAR 89
(U)(C)LRIP 2nd Year Approval	N/A	FEB 90	FEB 90
OT II Completed	DEC 88	JUN 91	JUN 92(Ch-1)
Milestone III B (DAB)	APR 89	SEP 91	N/A (Ch-2)
(U)(C)Initial Operational Capability	N/A	SEP 91	OCT 92(Ch-2)

b. (U) Previous Change Explanations --

A memorandum of agreement (MOA) was signed between Honeywell and the Navy in November of 1986 which called for completion of the Full Scale Development program within the "Should Cost" limit. Performance by Honeywell in the areas of cost and schedule made it apparent that the MOA between Honeywell and the Navy was not executable. ASN(RE&S) directed that the program be re-examined and that a comprehensive plan be established under which the program would be restructured and a firm ceiling price for the contract would be negotiated. This was accomplished in July 1987. The restructured program allowed for an

9b. (U) Schedule (Cont'd):
increase in development testing to ensure that a vigorously tested, reliable torpedo design existed before entering production. A delay in completion of OT-II from July 90 to December 90 was incurred due to a reduction of $8.4M from the FY-90 RDT&E budget. This delay caused a slip in Milestone IIIB and IOC from January 91 to April 91. A further slip in the completion of OT-II was forced by the requirement to conduct some additional test runs. A slip in MS IIIB and IOC also occurred as a result and was documented in a baseline change approved by the DAE on 8 March 1991. MK-50 torpedo achieved IOC on 27 October 1992. The actual dates for other past events have been revised to correct errors in the SAR submitted in March 1991.

c. (U) Current Change Explanations --

CH-1 The change from June 1991 to June 1992 is the result of two primary issues. First, delays in the original OPEVAL testing resulting from the need to conduct additional in-water runs due to faulty range test equipment and second, the requirement to conduct a Phase II of OPEVAL. Phase II was necessary in order to correct some software problems discovered during initial testing and to prove through an additional 53 in-water tests, under COMOPTEVFOR control, that the problems have been corrected.

CH-2 The change from November 1991 to N/A for Milestone IIIB is based on the termination of the production program and the decision by OSD to award the final production contract as an extension of the LRIP authority granted at MS IIIA. The change in Initial Operational Capability (IOC) from November 91 to October 92 reflects the actual date of approval for introduction of the MK 50 Torpedo for fleet use.

Both changes have been formally requested in a revised Program Deviation Report/Baseline Change Request. The original request was subsequently returned by OSD without action due to the dramatic change in the program.

d. (U) References --

(U) Development Estimate:
DCP 173 (12/83) dated 6 Jan 84 and SDDM dated 15 Mar 1984; MK-50 TORPEDO FSD APPROVAL.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

MK 50 TORPEDO, December 31, 1992

10a. (U) Performance Characteristics (Cont'd):

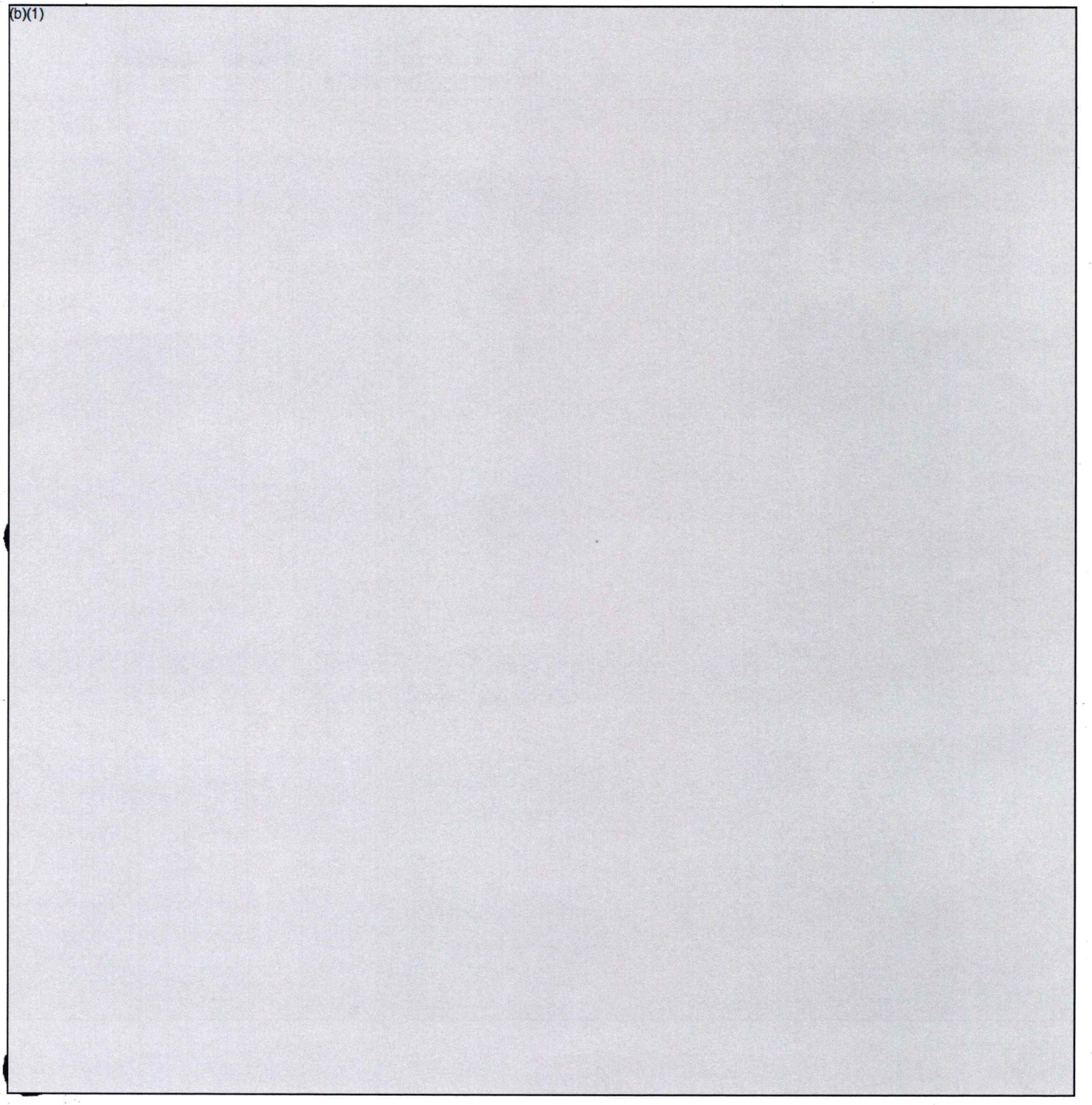
	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

10a. (U) Performance Characteristics (Cont'd):

(b)(1)



(b)(1)

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	1309.5	1700.3	1729.0
Procurement	4228.4	4847.9	1395.0
Sailaway	(3487.4)		(890.4)
Other Wpn Sys Cost	(453.1)		(469.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(287.9)		(35.1)
Construction (MILCON)	10.4	31.3	22.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	5548.3	6579.5	3146.5
Escalation	1105.4	2116.4	-63.0
Development (RDT&E)	(-142.6)	(-231.0)	(-226.9)
Procurement	(1249.5)	(2338.2)	(163.8)
Construction (MILCON)	(-1.5)	(9.2)	(0.1)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6653.7	8695.9	3083.5

b. (U) Quantity --			
Development (RDT&E)	108	N/A	108
Procurement	7743	7743	1073
Total	7851	7743	1181

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DCP 173 (12/83) dated 6 Jan 84 and SDDM dated 15 Mar 1984; MK-50 TORPEDO FSD APPROVAL.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3083.5	8002.2	3083.5
(2) Quantity	1181	7851	1181
(3) Unit Cost	2.611	1.019	2.611
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	250.9	250.9	23.9
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	250.9	250.9	23.9
(2) Quantity	212	212	0
(3) Unit Cost	1.183	1.183	N/A

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY89$)	3146.5	6212.7	6765.9
(2) Unit Cost	2.664	0.791	5.729
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY89$)	211.2	333.0	273.9
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	211.2	333.0	273.9
(2) Unit Cost	0.996	1.571	N/A

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	1.592	156.23
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-6670	-84.96
(4) PAUC (BY89$)	1.873	236.79
(5) CPUC (BY89$)	-0.575	-36.60

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	1.592	156.23
(2) CPUC (TY$)	0.000	0.00
(3) PAUC Quantity	-6670	-84.96
(4) PAUC (BY89$)	1.874	237.22
(5) CPUC (BY89$)	-0.575	-36.60

g. (U) Initial SAR (JUN 83)
(1) Program Acquisition Cost (TY$) -- 6496.1
(2) Program Acquisition Cost (BY$) -- 5258.3

h. (U) Unit Cost Changes.

(1) (U) PAUC --

PAUC changes are the result of production program termination. The program's production funding was cancelled after FY 93. The net result of this funding action was an increase in unit costs caused by amortizing the development costs over a procurement quantity approximately 85% smaller than anticipated.

(2) (U) CPUC -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1166.9	5477.9	8.9	6653.7
Previous Changes:				
Economic	-4.7	-452.1	+2.9	-453.9
Quantity	+26.5	-	+21.2	+47.7
Schedule	+159.0	+1684.1	-2.0	+1841.1
Engineering	+31.0	-	-	+31.0
Estimating	+86.9	-573.1	-11.8	-498.0
Other	-	-	-	-
Support	+68.8	+366.5	+3.4	+438.7
Subtotal	+367.5	+1025.4	+13.7	+1406.6
Current Changes:				
Economic	-1.2	+345.6	-	+344.4
Quantity	-	-4698.0	-	-4698.0
Schedule	-	-1.8	-	-1.8
Engineering	-	-	-	-
Estimating	-31.1	+182.1	-	+151.0
Other	-	-	-	-
Support	-	-772.4	-	-772.4
Subtotal	-32.3	-4944.5	-	-4976.8
Total Changes	+335.2	-3919.1	+13.7	-3570.2
Current Estimate	1502.1	1558.8	22.6	3083.5

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1309.5	4228.4	10.4	5548.3
Previous Changes:				
Quantity	+27.1	-	+17.3	+44.4
Schedule	+161.6	+1032.6	+0.6	+1194.8
Engineering	+32.9	-	-	+32.9
Estimating	+158.7	-896.3	-9.1	-746.7
Other	-	-	-	-
Support	+64.5	+240.3	+3.3	+308.1
Subtotal	+444.8	+376.6	+12.1	+833.5
Current Changes:				
Quantity	-	-2890.0	-	-2890.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.3	+156.7	-	+131.4
Other	-	-	-	-
Support	-	-476.7	-	-476.7
Subtotal	-25.3	-3210.0	-	-3235.3
Total Changes	+419.5	-2833.4	+12.1	-2401.8
Current Estimate	1729.0	1395.0	22.5	3146.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Escalation Indices.

Quantity: Reduction and subsequent restoration of 41 prototype torpedoes to accommodate testing requirements.

Schedule: Thirty-three month delay. Twenty-one due to program restructure and twelve due to previous slippage in RDT&E.

Engineering: Increased Reliability and Test Equipment Effort. Establishment of Engineering Qualification Test Program to allow increased reliability testing. Correction of afterbody anomalies.

Estimating: Change to "True" FY 84 Constant $ and general

13b. (U) Cost Variance Analysis (Cont'd):

reduction by House Appropriations Committee.
Addition of P3I Program for Advanced Warhead, subsequently deleted until threat defined.
FY 88 Appropriation Act Reductions.
Projected Honeywell Over Target Cost; addition of funds compensates for prior reduction.
Projected Government Cost Increases.

Support: Navy Industrial Fund Adjustment/CSS Reduction.

Navy laboratory support of increase testing program.

Procurement

Economic: Revised Escalation Rates.

Schedule: Stretch out of approximately 6 years due to reduced annual procurement quantity from 1,260 to 800 and slowed production ramp up.
A subsequent revision to the program increased production ramp up and annual production quantity from 800 to 1000. This resulted in shortening the production schedule by one year.

Movement of 119 torpedos to out years resulting from decreased procurement quantities in FY91-FY94 due to increased escalation.

Estimating: Change in First Unit (T1) Cost and Learning Curve assumptions and rate effects based on actual data from Prime Contractor and proposed data from Second Source.

Started competition earlier resulting in more torpedoes produced under full competition with resultant savings.

Changes based on negotiated values of torpedo and support equipment in the Honeywell and Westinghouse LRIP Contracts.

Support: Navy Industrial Fund/CSS Reduction and reduction of initial spares requirements based on required initial outfitting requirements for IMA.

Shift of Spares requirements from FY 88/89 to out years.

Support cost rose due to revised work breakdown structure and transfer of certain cost elements from swimaway to support.

13b. (U) Cost Variance Analysis (Cont'd):

MILCON

Quantity: Change of 5 IMA facilities for MK 50 from dual use to system specific.

Estimating: Change to "True" FY 84 Constant $ and reduced facility requirements..

Support: Addition of Intermediate Maintenance Activity at Charleston, S.C.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.2
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1
Changes and assumptions regarding duration of the 6.3 RDT&E program. (Estimating)	-25.2	-31.0
RDT&E Subtotal	-25.3	-32.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-473.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+818.6
Total Variance associated with decrease of 6670 units.	-2387.8	-3955.1
Quantity Variance resulting from decrease of 6670 units. (Quantity)	-2890.0	-4698.0
Estimating Variance resulting from Quantity Allocation. (Estimating)	+502.2	+742.9
Change in procurement buy schedule. (Schedule)	--	-1.8
Adjustment for Current & Prior Inflation. (Estimating)	+8.1	+11.5
Increased funds for LRIP I cost growth from congressional reprogramming. (Estimating)	+19.1	+24.7

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Changes due to revised assumptions due to production program termination. (Estimating)	-11.3	-16.3
Adjustment for FY 92 procurement estimate (Estimating)	-20.4	-29.0
Adjustment for Current & Prior Inflation. (Support)	+4.0	+5.4
Support and spares reductions due to premature production program termination. (Support)	-480.7	-777.8
Reflects revised assumptions to align sailaway and support costs. (Estimating)	-341.0	-551.7
Procurement Subtotal	-3210.0	-4944.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.827	-0.059	--	--	0.046	--	--	0.033	0.020	0.847

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.847	-0.093	0.851	1.557	0.026	-0.294	--	-0.283	1.764	2.611

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) MK-50 TORPEDO LRIP II:
ALLIANT TECHSYSTEMS INC., HOPKINS, MN
N00024-90-C-6024, FPI
Award: November 6, 1989
Definitized: November 6, 1989

Initial Contract Price		
Target	Ceiling	Qty
$122.5	$135.6	100

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$126.3	$137.4	100	$126.3	$128.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.5	$-12.0
Cumulative Variances To Date (01/20/93)	$-3.9	$-0.6
Net Change	$-2.4	$11.4

Explanation of Change:

The change in cost variance was driven by the efforts to complete deliveries and reduce schedule slippage. All torpedoes have now been delivered.

Cost variance has grown to $-3.9M since the last SAR, this represents a 3.6% growth over anticipated contract costs. The cost is unlikely to grow by any significant amount since the torpedoes have all been delivered and no major costs are being accrued. The projected EAC indicates an added cost to the government of $3.55M which the program office has available to fund this growth.

Schedule variance has decreased to an insignificant amount (approximately .6% behind schedule) and as mentioned above, all torpedoes have been delivered. The contract is well over 94% complete and this will be the last time it is included in the SAR.

(U) MK-50 TORPEDO LRIP II:
WESTINGHOUSE ELEC. CORP., CLEVELAND, OH
N00024-90-C-6017, FPI
Award: January 30, 1990
Definitized: January 30, 1990

Initial Contract Price		
Target	Ceiling	Qty
$124.3	$140.7	100

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$113.2	$128.2	100	$117.0	$117.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.6	$-19.3
Cumulative Variances To Date (01/31/93)	$-3.3	$-3.4
Net Change	$-1.7	$15.9

Explanation of Change:

The cost variance change was minimal in terms of contract value and schedule recovery was significant. Major achievements were made in afterbody production which helped control cost growth and contributed in a large part to the contractors rate of torpedo deliveries over the past twelve months.

This contract is now very near completion and there are only 4 torpedoes remaining to be delivered. The contractor has made major strides in performance and cost rose by less than 2% of contract value over the past year while completion and delivery of 96 torpedoes was accomplished. The contract is now well over 90% complete and this will be the last time it will be included in the SAR.

	Initial Contract Price		
(U) MK-50 TORPEDO LRIP III:	Target	Ceiling	Qty
ALLIANT TECHSYSTEMS INC., HOPKINS, MN			
N00024-91-C-6006, FFP	$99.5	N/A	100
Award: February 7, 1991			
Definitized: February 7, 1991			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$99.5	N/A	100	$99.5	$99.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is a Firm Fixed Price contract and data provided as required under the terms of the contract indicates that the contractor's performance to date is in accordance with his original spend plan. There is no reason to believe that the contractor will not be able to perform as required by the terms, conditions and price of the contract.

15. (U) Contract Information (Cont'd):

(U) MK-50 TORPEDO LRIP III:
WESTINGHOUSE ELEC. CORP., CLEVELAND, OH
N00024-91-C-6105, FFP
Award: February 7, 1991
Definitized: February 7, 1991

Initial Contract Price		
Target	Ceiling	Qty
$134.0	N/A	165

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$134.0	N/A	165	$134.0	$134.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is a Firm Fixed Price contract and data provided as required under the terms of the contract indicates that the contractor's performance to date is in accordance with his original spend plan. There is no reason to believe that the contractor will not be able to perform as required by the terms, conditions and price of the contract.

(U) MK-50 TORPEDO LRIP IV:
ALLIANT TECHSYSTEMS INC., HOPKINS, MN
N00024-93-C-6118, FFP
Award: November 5, 1992
Definitized: November 5, 1992

Initial Contract Price		
Target	Ceiling	Qty
$122.6	N/A	246

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$122.6	N/A	246	$122.6	$122.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is a firm fixed price contract. The full quantity was awarded to Alliant Techsystems in a competition between Alliant and Westinghouse. Performance data required under the contract (awarded in November 1992) has not started to be delivered but there is no reason to believe the contractors performance will not be in accordance with the terms of this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 90.5% (19 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 99.1% ($3056.0 / $3083.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY75-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	1502.1	-	-	-	1502.1
Procurement	1531.3	23.9	3.6	-	1558.8
MILCON	22.6	-	-	-	22.6
O&M	-	-	-	-	-
Total	3056.0	23.9	3.6	-	3083.5

The significant decrease in program funding is the direct result of the decision made by the Navy to terminate the MK 50 Torpedo production program.

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1975				3.8	1.8	1.8	1.8	10.9
1976				19.1	9.5	9.5	9.5	6.6
197T				6.0	3.1	3.1	3.1	2.9
1977				33.5	17.8	17.8	17.8	2.6

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1978				42.4	24.3	24.3	24.3	6.8
1979				69.9	44.2	44.2	44.2	8.4
1980				85.6	59.9	59.9	59.9	10.6
1981				129.5	98.8	98.8	98.8	10.6
1982				129.5	104.0	104.0	104.0	7.6
1983				136.9	114.9	114.9	114.9	4.9
1984				164.6	143.1	143.1	143.1	3.8
1985				164.5	147.5	147.5	147.5	3.4
1986				164.6	151.8	151.8	151.8	2.8
1987				182.1	173.0	173.0	172.7	2.7
1988				142.6	140.0	140.0	139.7	3.0
1989				133.2	136.2	136.2	135.9	4.2
1990				59.4	63.3	63.3	56.7	4.0
1991				43.2	47.6	46.5	34.0	4.3
1992				11.0	12.5	11.7	0.3	2.8
1993				7.6	8.8	8.0		2.4
1994								2.4
Subtot	108			1729.0	1502.1	1499.4	1460.0	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy								
1987				66.9	66.2	66.2	66.2	2.7
1988	10	17.2	42.2	118.3	121.6	116.7	115.8	3.0
1989	140	13.8	165.0	201.8	215.7	200.0	185.2	4.2
1990	200		141.6	248.6	274.9	269.2	144.9	4.0
1991	265		216.2	293.9	333.0	296.2	54.8	4.3
1992	246		151.5	231.7	269.0	188.7	4.2	2.8
1993	212		142.9	211.2	250.9	49.1		2.4
1994				19.7	23.9			2.4
1995				2.9	3.6			2.3
1996								2.3
Subtot	1073	31.0	859.4	1395.0	1558.8	1186.1	571.1	

The amounts shown for FY 88 and FY 89 have been increased to reflect funds added via congressional reprogramming.

Westinghouse Production Qualification Units (Refers to WPN quantity for FY 1988).

Appropriation: 1205 Military Construction, Navy

1982				10.6	8.9	8.9	8.9	7.6
1983								4.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1205 Military Construction, Navy (Cont'd)								
1984								3.8
1985								3.4
1986								2.8
1987								2.7
1988								3.0
1989				3.7	3.9	3.9	3.3	4.2
1990								4.0
1991								3.9
1992				8.2	9.8			3.1
1993								3.3
1994								3.3
Subtot				22.5	22.6	12.8	12.2	
Grand Total	1181	31.0	859.4	3146.5	3083.5	2698.3	2043.3	

17. (U) **Production Rate Data:**

a. (U) Production Baseline Rate

Production terminated after FY93.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		23.9		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	3.6		-3.6	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	108/108
Procurement	340/336

RDT&E quantities include 90 torpedoes in the 200 series reflected the FSD Program and 18 100 series torpedoes under the D&V Program.

Procurement quantities include 10 torpedoes under the follower qualification program for Westinghouse. Alliant and Westinghouse have delivered all LRIP I torpedoes, and Westinghouse has only 4 LRIP II torpedoes remaining.

17d. (U) Production Rate Data (Cont'd):

d. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 1000 - @ Peak Rate: 83/mo			
FY 89 Base-Year $	0.4	0.6	0.4
Then Year $	0.5	0.8	0.5
@ Qty 0 (1st three years) - @ Peak Rate: 0/mo			
FY 89 Base-Year $	0.0	0.0	0.0
Then Year $	0.0	0.0	0.0

Current estimate is based on the same methodology as was used to calculate the development estimate. In the current estimate, however, it takes five years of production to attain 1000 units whereas in the development estimate it took only one. The reason for the extra years of production to achieve 1000 units is the dramatic reduction in procurement funding and the resultant lower annual quantities. The peak rate attained in the development estimate (83/MO) is never achieved in the current estimate (peak rate is only 50 units/month).

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

These appropriations include MPN, O&MN, WPN AND OPN. Costs contained herein were developed using the MK-50 Torpedo Life Cycle Cost Model with the most current data available. This cost estimate was prepared in accordance with the program submitted as the FY-94 President's budget. This is the same method used to develop the O&S Costs previously briefed to the OSD Cost Analysis Improvement Group (CAIG) in February of 1989.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per MK-50 INVENTORY	Average Annual Cost per Antecedent.
Operations	5.4	N/A
IMA Maintenance	10.7	N/A
Depot Maintenance	1.0	N/A
Sustaining Investment	5.6	N/A
Depot Supply Support	1.0	N/A
Total	23.7	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	0.8	0.2	0.2	4.2	5.4
Total	0.8	0.2	0.2	4.2	5.4

Increase in IMA maintenance costs due to requirement to fund military personnel costs at NIF operated facilities.

No changes are planned for the CSS structure in support of the O&S phase of the program.

N-6 ASPJ

A-107

SECRET

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: ASPJ (AN/ALQ-165)

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 26 1993
11

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
AN/ALQ-165 (Airborne Self-Protection Jammer)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
TACTICAL AIR PROGRAMS
PMA-272
WASHINGTON, DC 20361-1272
CAPT T. F. SNYDER
Assigned: October 23, 1992
AV 222-5480 COMM 703 692-5480

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604270F, 0604270N

5. (U) Related Programs: None.

No Security Objection
to Open Publication
(AS AMENDED)
93-07242
MAY 25 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

6. (U) Mission and Description:
The Airborne Self-Protection Jammer (ASPJ), AN/ALQ-165(V), was a state-of-the-art Defensive Electronic Countermeasure (DECM) system

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6. (U) Mission and Description (Cont'd):

for the self-protection of tactical aircraft. The system was to meet tactical aircraft DECM needs into the 21st century. ASPJ was fully integrated with aircraft avionic and weapon systems (Radar, RWRs, HARM, AMRAAM, etc.). The system was modularly designed with reprogrammable software. Modular construction and software controlled system management would have allowed airframe users to install the level of capability required depending upon the radar cross-section of the platform to be protected, the airframe installation and/or tactical need. Computer programs developed for the ASPJ system were fully modular in design and segmented to cover separate operational functions or control separate hardware elements.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The program was started in 1969 as a traveling wave tube component development effort. In 1976, the Director of Defense Research and Engineering directed that this program (renamed ASPJ) and the Air Force lightweight, low cost countermeasure program be combined with the Navy designated as lead service. Major design changes were funded to achieve 100% commonality between Navy and Air Force systems. All twelve ASPJ Full-Scale Development (FSD) prototype models were delivered and fielded for testing. A 10 December 1986 decision memorandum approved an ASPJ Production Verification (PV) phase. The basic ASPJ PV contract for 6 units was awarded on 31 August 1987 to the joint venture of ITT and Westinghouse, and an option for 14 units was exercised on 31 August 1988. Operational testing (OPEVAL) to support the MSIIIA decision occurred in July 1988 through March 1989. The Defense Acquisition Board (DAB) approved the award of limited production contracts in August 1989. Two Low-Rate Initial Production contracts were awarded in October 1989 for 50 systems per contractor. The FY 91 Amended Budget Submit removed all FY 90 and subsequent unobligated Air Force funds from the program. Contractor testing, government lab tests, and F/A-18C DT-IIE began in 1990 on the PV systems. Developmental testing was successfully completed in May 1991. Electrical Performance Testing, Environmental Qualification Testing, interchangeability testing, system reliability growth testing and built-in-test software error validation testing have been successfully completed. The DAB approved a Lot II award split between the contractors with a cap of $90M in July 1991. Two Lot II contracts were awarded on 12 July 1991 for a total of 36 systems. OPEVAL began on 12 August 1991. Delivery of the Lot I systems began in December 1991. OPEVAL was completed on 22 May 1992. COMOPTEVFOR released the OPEVAL report on 17 August 1992 which determined the ASPJ to be not operationally suitable and not operationally effective, and limited fleet introduction in the F-14D was recommended after further testing.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
On 15 December 1992, ASN(RD&A) directed that all ASPJ production contracts be terminated. At that time, the contractors had delivered 95 of 100 Lot I systems. This is the final SAR.

c. (U) Changes Since As Of Date --
ASN(RD&A) has requested release of FY 1993 RDT&E funds to support ASPJ systems in the F-14D OPEVAL, but the Navy's General Counsel has issued a legal opinion that the procurement of ASPJ racks for the F-14D OPEVAL is prohibited by Section 122 of the FY 1993 Authorization Act.

8. (U) Threshold Breaches:
There are no breaches to the Acquisition Program Baseline dated 08 April 1993 and there are no Nunn-McCurdy unit-cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Production Award Lot 1	N/A	OCT 89	
Complete Phase I	AUG 81	N/A	FEB 81
Contract Award, Phase II	DEC 81	N/A	AUG 81
Combined DT-IIC/OT-IIA (Start)	APR 86	N/A	MAR 88
DAB III (A)	AUG 86	N/A	JUN 89
Limited Production Contract	NOV 86	N/A	OCT 89
Milestone IIIA	N/A	MAY 91	JUN 91
Op Test (OT-IID)			
Start	N/A	JUL 91	AUG 91
Complete	N/A	DEC 91	MAY 92
Lot I Deliveries (100 units)			
Start	N/A	DEC 91	DEC 91
Complete	N/A	NOV 92	DEC 92(Ch-1)
Milestone IIIB	N/A	N/A	N/A (Ch-2)

(b)(1)

Milestone IIIA which occurred in June 91 was actually Milestone IIIA'. DAB III (A) which occurred in June 89 was Milestone IIIA.

9b. (U) Schedule (Cont'd):

b. (U) Previous Change Explanations --

(U) DAB III(A) (MS IIIA), contract award and IOC delayed due to technical problems encountered during FSD development/operational testing.
(U) MSIIIA' decision did not occur until Jun 91 and the start of OT-IID was delayed until Aug 91 due to administrative delays.
(U) MSIIIB delayed to allow for testing with the F/A-18 91C software release.
(U) IOC delayed due to updated fleet information with a corresponding delay in System Maturity.
(U) Production Complete delayed due to an increase in inventory objective.
(U) Navy Support Date changed from Aug 95 to Sep 95 based on Physical Configuration Audit schedule.
(U) MSIIIB, IOC, and System Maturity delayed to allow review of the OPEVAL report by the Navy and D,OT&E.
(U) Completion of OT-IID was delayed until May 92 to allow for testing with the F/A-18 91C mission computer software.

c. (U) Current Change Explanations --

(U) (CH-1) The Lot 1 deliveries completed on 15 Dec 92 when the contracts were terminated. 95 of 100 systems had been delivered.

(U) (CH-2) MS IIIB and Navy Support Date are no longer applicable as a result of program termination.

(U) (CH-3) IOC, Material Support Date, and System Maturity are TBD and depend on success of efforts to deploy already delivered systems on the F-14D.

(U) (CH-4) Production Complete was changed from APR 02 to DEC 92 as a result of production termination.

d. (U) References --

(U) Development Estimate:
Deputy Secretary of Defense Decision Memorandum (SDDM), 24 February 1982 and Under Secretary of Defense (USD) (C3I0 Decision Memorandum (DM), 20 March 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 April 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Operational Availability (Ao)					
Basic	.93	.93 / .92	.98	.92	
Common	N/A	.90 / .88	N/A	.88	
Mission Reliability (1.75 hr mission)					
Basic	.96	.96 / .95	.93	.95	
Common	N/A	.95 / .94	N/A	.94	
Maintenance Demand (hrs)					
Mean Flight Hrs Between Maintenance Action					
Basic	8.6	8.6 / 6.8	15.6	6.8	
Common	N/A	6.8 / 5.6	N/A	5.6	
Direct Maintenance Manhours/Maintenance Action					
Basic	.95	.95 / 2.18	N/A	2.18	
Common	1.2	1.2 / 2.65	N/A	2.65	
Mean Time to Repair (hrs)					
O Level	N/A	.5 / .75	.69	0.75	
I Level	N/A	1.5 / 1.5	N/A	N/A	(CH-1)
Logistics Demand					
Mean Flight Hrs Between Removal					
Basic	21.5	21.5 / 17.0	N/A	17.0	
Common	N/A	17.0 / 14.0	N/A	14.0	

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10b. (b)(1) [redacted]

c. (U) Current Change Explanations --

(U) (CH-1) The termination of production contracts cancelled effort which would have provided intermediate-level maintenance capability.

d. (U) References --

(U) Development Estimate:
SDDM, 24 February 1982, and USD C3I DM, 20 March 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 April 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	227.7	532.7	532.7
Procurement	0.0	0.0	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	227.7	532.7	532.7
Escalation	8.7	3.7	3.7
Development (RDT&E)	(8.7)	(3.7)	(3.7)
Procurement	(0.0)	(0.0)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	236.4	536.4	536.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	0	0
Total	0	0	0

Note: Excludes 12 RDTE prototypes from the SAR Baseline and 12 from the Current Estimate that are not considered fully configured.

11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs -- Efforts for FMS KS-D-SIK for the sale of 40 ASPJ systems, related hardware and support to the Government of Korea have been terminated.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
SDDM, 24 February 1982 and USD C3I DM, 20 March 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 April 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	536.4	561.0	536.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

	(FY 1993)	(FY 1993 APPN)	(FY 1994)
b. (U) Current Procurement --			
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	236.4	0.0	0.0	236.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+25.4	-	-	+25.4
Engineering	+52.1	-	-	+52.1
Estimating	+247.9	-	-	+247.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+325.4	-	-	+325.4
Current Changes:				
Economic	-0.3	-	-	-0.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.1	-	-	-25.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-25.4	-	-	-25.4
Total Changes	+300.0	-	-	+300.0
Current Estimate	536.4	-	-	536.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	227.7	0.0	0.0	227.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	+21.8	-	-	+21.8
Engineering	+40.8	-	-	+40.8
Estimating	+259.7	-	-	+259.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+322.3	-	-	+322.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-17.3	-	-	-17.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-17.3	-	-	-17.3
Total Changes	+305.0	-	-	+305.0
Current Estimate	532.7	-	-	532.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Escalation Rates
Correction of prior SAR
Adjustment for Negative Program Change

Schedule: Delay of aircraft integration
Change per JRMB directed test plan

Engineering: Required technical improvement initiatives FY 89-92
Re-assessment of Pre-Planned Product Improvement requirements

Estimating: Allocation of adjustments
Restructure of P3I Plan
Removal of Air Force funds
Re-allocation of prior years unobligated balances

13b. (U) Cost Variance Analysis (Cont'd):
Continuation of Air Force testing program
Correction of prior SAR
Current & Prior Inflation Offset
FY92-97 adjustment to Navy P3I program
Reprogrammed funds for additional OPEVAL ordnance

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.7
Deletion of Funds due to program termination. (Estimating)	-14.7	-21.8
Reallocation of prior years. (Estimating)	-2.7	-3.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.I	+0.1
RDT&E Subtotal	-17.3	-25.4

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not Applicable.

15. (U) Contract Information:

ASPJ FSD contract #N00019-81-C-0369 is a completed contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 94.1% (16 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 98.4% ($528.0 / $536.4)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	528.0	8.4	-	-	536.4
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	528.0	8.4	-	-	536.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1978				3.9	2.6	2.6	2.6	6.8
1979				21.0	15.6	15.6	15.6	8.4
1980				16.1	13.2	13.2	13.2	10.6
1981				31.1	27.8	27.8	27.7	10.6
1982				25.4	23.9	23.9	23.7	7.6
1983				32.3	31.8	31.8	31.7	4.9
1984				39.6	40.3	40.3	39.9	3.8
1985				31.8	33.4	32.4	32.4	3.4
1986				20.3	21.9	21.9	20.4	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1987				8.6	9.6	9.6	8.3	2.7
1988				14.0	16.1	15.9	15.3	3.0
1989				6.6	7.9	7.8	7.4	4.2
1990				5.5	6.9	6.9	6.5	4.0
1991				8.9	11.5	11.5	10.5	4.3
1992				1.7	2.3	2.2	1.1	2.8
1993				5.3	7.2			2.4
1994				6.0	8.4			2.4
1995								2.3
1996								2.3
1997								2.2
Subtot				278.1	280.4	263.4	256.3	
Navy				278.1	280.4	263.4	256.3	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1979				6.5	4.8	4.8	4.8	8.4
1980				11.1	9.1	9.1	9.1	10.6
1981				13.6	12.2	12.2	12.2	10.6

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1982				57.8	54.4	54.4	54.4	7.6
1983				50.6	49.8	49.8	49.8	4.9
1984				40.9	41.7	41.7	41.7	3.8
1985				23.1	24.3	24.3	21.6	3.4
1986				7.9	8.5	8.5	7.5	2.8
1987				10.6	11.8	10.2	9.8	2.7
1988				12.7	14.6	14.6	11.2	3.0
1989				7.2	8.6	8.6	8.6	4.2
1990				1.9	2.4	2.4	2.3	4.0
1991				10.7	13.8	13.8	7.4	4.3
Subtot				254.6	256.0	254.4	240.4	
USAF				254.6	256.0	254.4	240.4	
Grand Total				532.7	536.4	517.8	496.7	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None. ROTRE 12/7

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Average annual cost for all fielded systems.
Based on 484 USN systems.
Estimate as of May 1991.
No antecedent.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per all fielded systems	Avg Annual Cost Per
All fielded systems	30.0	N/A
Total	30.0	N/A

c. (U) Contractor Support Costs -- None.

AF-6 C-17

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OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: C-17

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION
MAY 18 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

10

1. **Designation and Nomenclature (Preferred Name):**
C-17A Globemaster III

2. **DoD Component:** USAF

3. **Responsible Office and Telephone Number:**
C-17 SYSTEMS PROGRAM OFFICE
AERONAUTICAL SYSTEMS CENTER
2600 PARAMOUNT PLACE
FAIRBORN, OH 45324-6766

B/GEN KENNETH G. MILLER
Assigned: July 15, 1991
AV 785-1545 COMM 513-255-1545

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604227F (Shared) Project 663282
PE 0604609F (Shared) Project 663263 (Shared)
PE 0604231F
PROCUREMENT:
APPN 3010 ICN C017AD (Air Force)
MILCON:
PE 0401130F

SAF/PAS
93-359 -T

5. **Related Programs:**
None.

6. **Mission and Description:**
The purpose of the C-17 aircraft is to modernize the airlift fleet and improve the overall capability of the U.S. to rapidly project,

OASD(PA) DFOISR 93-0574

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6. Mission and Description (Cont'd):

reinforce and sustain combat forces worldwide. The aircraft will augment the C-5 and C-141 in intertheater deployment and the C-130 with intratheater operations. Because the C-17 will be capable of carrying outsize cargo over intertheater ranges into austere airfields, it introduces a direct deployment capability that will significantly improve airlift responsiveness. This improved responsiveness will, in turn, dramatically improve the mobility of our general purpose forces.

Significant features of the multi-engine C-17A include: supercritical wing design and winglets to reduce drag and increase fuel efficiency and range; receiver inflight refueling capability to increase range; externally blown flap configuration, direct lift control spoilers and high impact landing gear system, all of which contribute to the aircraft's capability to operate into and out of small austere airfields; forward and upward directed thrust reverser system that provides backup capability, reduces the aircraft ramp space requirements, and minimizes interference of dust and debris on the activities of ground personnel; cargo door, ramp airdrop and cargo restraint systems that are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two man cockpit with cathode ray tube (CRT) displays that reduce complexity and improve reliabililty; maximum use of built-in test (BIT) features to reduce maintenance and troubleshooting times; and walk-in avionics bays that improve accessibility. The end result is significantly reduced maintenance manhours per flight hour.

7. Program Highlights:

a. Significant Historical Developments --

A SECDEF decision during the FY81 budget review directed funding for a new aircraft which places increased emphasis on strategic airlift capability. The initial C-X Program Management Directive (PMD) was issued on 10 December 1979. The requirements for the C-17A aircraft were formalized by the C-X Mission Element Need Statement (MENS), dated 28 November 1980. In August 1981, SECAF announced Douglas Aircraft Company as the winner of the C-X source selection.

On 23 July 1982, the FSED contract that had been negotiated during the C-X source selection was awarded to Douglas with a restructure clause inserted to limit the scope of the contract to a 15 month modestly paced program.

A revised PMD was issued in July 1983 which directed the continuation of C-17 design effort and the initiation of activities leading to an FSD start by FY85, a production start by FY88, and an initial operational capability of 12 aircraft in FY92.

7a. Program Highlights (Cont'd):

On 15 February 1985, the Secretary of Defense approved FSED contingent on second source certification. The program office and Douglas Aircraft Company completed negotiations on the C-17 contract restructure on 31 October 1985. Secretary of the Air Force, the Honorable Mr. Rourke, signed the C-17 second source certification to Congress on 30 December 1985, and the restructured contract was issued the following day.

In 1986, the On-Board Inert Gas Generating System (OBIGGS) was incorporated in the C-17 program.

In January 88, the first competitively-priced production option for two aircraft was exercised, along with long lead for the second production option for four aircraft. The first F117 engine was delivered in May 88. It is being used for ground test. Air Vehicle CDR was accomplished in August 88. Production Readiness Review #3, completed in August 88, indicated that the transition to production was proceeding with no "show stoppers". Assembly start for the first test aircraft occurred at Douglas Aircraft Company (DAC), Long Beach, on 24 August 88. A DAB review for Milestone IIIA approval for low rate initial production (FY89-92) was held on 5 December 88. Another Defense Acquisition Board (DAB) program review was scheduled prior to release of FY91 and 92 production funds.

The December 88 SAR and the funding therein reflected a Multiyear Procurement Strategy for FY93-96.

Milestone IIIA approval was received on 18 January 1989 for the next two lots of C-17s (4 in FY89 and 6 in FY90) plus advance procurement for 10 aircraft planned in FY91. Congressional cuts in FY90 and 91 procurement (4 versus 6 and 6 versus 10 aircraft) have resulted in a restructure of the buy profile.

Honeywell was terminated as Electronic Flight Control System (EFCS) subcontractor on 28 July 1989. General Electric Aircraft Control Systems in Binghamton, New York is the new EFCS subcontractor.

In July 1989, DAC signed a Memorandum of Agreement (MOA) with DELCO, the Mission Computer subcontractor, making DAC responsible for Mission Computer software management. DELCO continues to perform software development/integration with DAC as the overall manager. Action has been taken to streamline the development process.

C-17 completed a Conventional Systems Committee (CSC) and DAB program review on 30 October 1989. The review covered impacts of program schedule slippage and Congressional action to slow low-rate initial production. Both the CSC and DAB approved proceeding with the

7a. Program Highlights (Cont'd):

program.

In September 1990, the contract was modified to reflect the revised schedule (June 1991 first flight).

The SECDEF directed Major Aircraft Review (MAR) resulted in the reduction of the total aircraft buy for this program from 210 to 120 therein precipitating a cost increase in excess of 25% per unit (PAUC). The cost estimate reflected in the 30 September 90 SAR represents the Air Force's best effort to cost this new program in accordance with the SECDEF decision.

A September 1990 SAR was submitted to provide details on a Nunn-McCurdy unit cost breach based on the MAR decision. It also incorporated multi-year assumptions, specifically 24 aircraft per year (FY 95-97) with EOQ (economic order quantity) funding beginning in FY94.

In October 1990, Honeywell successfully completed qualification testing of the first flight software build for the Inertial Reference Unit (IRU). This software was then installed in the Engineering and Flight Development Units.

All four engines were installed on T-1 by 2 November 90. The T-1 Fan Reverser Assemblies were delivered from LTV and installed on the aircraft in early December 1990.

All major Static Test airframe components were in position and ready for major join on 11 November 1990.

On 5 December 1990, the Flight Hardware Simulator was powered up to support system level avionics and flight control system testing.

The Software design review of the Mission Computer production software was successfully completed on 7 December 1990.

In late December 90, DAC announced that Mr. Dave Swain had become the new C-17 program manager. Mr. John Capellupo resumed his position as Deputy President of DAC.

On December 21, 1990, DAC completed the assembly of the T-1 aircraft, a major program milestone and prerequisite for the award of the next production contract. Negotiations on the Lot III contract had started on 17 December 1990.

The Government has reviewed the Contractor's cost status and estimate to complete for the prime contract. Progress payments were made in

7a. Program Highlights (Cont'd):

October and November 1991 based on the government's estimate at completion

The Government reached contractual settlement with DAC on Lot III and the Lot II restructure on 30 July 91. This agreement allowed the C-17 program to continue without a production break.

P-1 aircraft was moved to the airload facility March 91. Airload calibration was successfully completed in August 91.

A joint Air Force team comprised of AFSC, ASD, DPRO and DCAA personnel completed a C/SCSC Surveillance Review at DAC 26-29 August 91. Results of this review indicated that DAC cost/schedule control system has substantially improved during 1991.

The C-17 FSED aircraft (P-1) Flight Test Program was initiated with the accomplishment of T-1 first flight (2.4 hours) on 15 September 91 at the Air Force Flight Test Center (AFFTC), Edwards AFB, California. T-1 has accomplished 31 sorties for a total of 88.3 flight hours (15 September - 31 December 91).

C-17 assembly line streamlining efforts continue with ever increasing successes. The Full scale static FSED test article completed assembly and was delivered to the test facility on 15 October 91. The year ended with P-1 and P-2 in final assembly, durability FSED test article and P-3 in major join, and P-4 and P-5 in half join.

The FY92 Appropriation Bill reflected a buy profile change in FY92 to 4 versus 6. Douglas Aircraft Company is in the process of revising their cost proposal for Lot 4 to reflect this change.

b. Significant Developments Since Last Report --
A Government team thoroughly scrubbed the Contractor's 15 January 92 production Lot IV and V long lead proposals to assure the program could be continued within approved funding levels. The long lead contracts were awarded on 12 February 92. The Requests for Proposal (RFPs) for production Lots V and VI were released in April 92.

The Request for Proposal for Airlift Defensive Systems, a major upgrade to the baseline aircraft design, was released in June 1992. This Engineering Change Proposal will enhance the survivability of the C-17 in low to medium threat environments.

Several initiatives were launched by the C-17 SPO in 1992 to control and reduce program cost. These initiatives involved adding Production Variability Reduction, Production Engineering and Value Engineering programs to the contract. Cost Reduction Incentives and Industrial

7b. Program Highlights (Cont'd):

Modernization Improvement Program (IMIP) continue to have strong emphasis throughout this period. A Cost Reduction Conference was held at the contractor's facility 17-18 August 1992, involving the prime contractor and his 8 largest subcontractors.

The business clearance to begin production Lot IV negotiations was granted by the Program Executive Officer in September 92. Negotiations commenced on 9 September 92 and are continuing.

Both static load testing and durability testing of full-scale C-17 structural airframes was initiated in 1992. Five load conditions were completed on the static test article before a failure of the wings occurred on 1 October 92. This failure occurred at approximately 124% of limit load. A high level independent executive review team was convened to oversee the determination of the cause of failure and to confirm the contractor's recommended corrective action plan.

The C-17 Program Office has launched its efforts to incorporate Integrated Weapon System Management (IWSM) philosophy and practices into the program. The Joint ASC/SA-ALC IWSM working group was chartered in July 1992, developed an IWSM Implementation schedule by September 1992 and conducted intensive off-site conferences in October and November 1992.

In October 1992 the Douglas Aircraft Company - Government Segment (DAC-GS) was effectively renamed McDonnell Douglas Aerospace - Transport Aircraft (MDA-TA). This name change results from a reorganization within the McDonnell Douglas Corporation with no significant impact to the operating organization's cost and schedule practices and procedures.

On 31 December 1992 a negotiated agreement was reached with the contractor to reset the delivery schedule for contract F33657-89-C-0001 (FY90, Lot III) to reflect the behind schedule condition of the contractor and to adjust production schedules for a more efficient flow considering reduced quantities in the out years. At this same time, the Air Force and the contractor agreed to adjust the planned delivery schedules for Lot IV (FY92), Lot V (FY93), and Lot VI (FY94) to reflect the adjusted program schedule. These schedules will be definitized with the definitization of the Lot contracts.

Four C-17 aircraft (P-1 through P-4) were delivered to the government between May and December 1992. This enabled the test program to make significant progress, with 856.9 total hours flown by 15 December 92. Environmental testing of the C-17 was initiated at Eglin AFB on P-3

7b. Program Highlights (Cont'd):

on 20 November 92. Other significant test accomplishments in 1992 include successful in-flight operation of the cargo door and ramp, successful demonstration of main landing gear, self-jacking capability, completion of flutter testing, aerial refueling, short field landings, take off at the maximum aircraft gross weight, ground maneuverability, and demonstration of powered lift.

The C-17 Live Fire Test Program progressed in 1992 with successful shots of 12.7mm rounds at a hydraulic accumulator, composite material coupons, and a simulated wing spar web.

The FY 1993 Defense Authorization and Appropriations Acts reduced the FY 93-94 buy profile from 8-12 to 6-8, with restrictions on the obligation of FY93 funds until certain events occurred in the production line, and also directed a special Defense Acquisition Board review before obligation of FY94 production funds. The proposed Clinton President's Budget further reduces FY94 from 8 to 6 aircraft.

The SPO also initiated contractor activity to comply with direction to remove Ozone Layer Depleting (OLDS) materials from the program, along with other Hazardous Materials.

The SPO continued to work eleven contractor claims throughout CY 92 totalling $345M. No new claims were received this period.

The Contractor decided in 1992 to consolidate fabrication activity, shutting down operations in Columbus, Ohio, Torrance, California, and Culver City, California.

The C-17 is expected to satisfy mission requirements as revalidated by the Air Force Chief of Staff-directed requirements review in December 1989.

c. Changes Since As Of Date --

On 12 January 1993 the Program Office provided Mr. Yockey, USD(A) a C-17 program review. The review covered all aspects of the program, including cost/funding, technical performance, status of contractual actions and schedule. He requested this review to establish an avenue to transition oversight of the program to the new USD(A).

On 26 January 93, a Long Lead increment of $62.8M was added to the Lot VI Long Lead contract. A second increment of $21.6M was added on 1 April 93 resulting in total obligated dollars for Lot VI of $84.4M.

McDonnell Douglas Aerospace (MDA) satisfactorily demonstrated that its cost/schedule management system complies with the cost/schedule

7c. **Program Highlights (Cont'd):**

control systems criteria (C/SCSC) required by Department of Defense (DoD) instruction 5000.2 for production contracts and was awarded Tri-Service Validation on 10 February 1993.

As a result of congressional direction in the FY93 Defense Bill, a Senior Management Review Group was formed within OSD to oversee the cost, schedule, and performance of the C-17 program. The first meeting was conducted on 26 February 1993, wherein, the SPO provided an in depth review of the program. The next meeting will be held in May 1993.

Aircraft P-5 first flight occurred on 31 January 1993. The aircraft was delivered to the Air Force on 12 March 1993 and subsequently flown to Patuxant River NAS for testing.

The SPO, contractor, and an independent review team, have determined the root cause of the static test article wing failure. In addition a corrective action plan has been identified and implemented. The Executive Independent Review Team has concurred with the plan for implementing the fix into the production fleet. This plan was briefed to the Acting Secretary of the Air Force in March 93. It is estimated that static testing will resume in July 93, with completion of required testing to support flight test by late December 93. Total flight test hours flown as of 31 March 93 are 1146.8.

Incorporation of new inflation rates causes potential program unexecutability in FY94 and out years. Results of this assessment will be incorporated in future documentation as necessary.

8. Threshold Breaches:

There are currently four breaches to the 20 February 1992 DAE Approved Acquisition Baseline. The Program Office's FY92 Annual Estimate revealed a procurement cost breach of 5.7%. A breach report was forwarded by the Program Office on 27 July 1992. Additionally, flight test program projections show that Development Test and Evaluation will now be completed in Sep 94 versus Aug 93 in the Baseline and the Dedicated portion of Initial Operational Test & Evaluation will not start/end until Jan 94/Jun 94 versus Jan 93/Aug 93 in the Baseline. The flight test schedule changes were reported in a breach report on 20 October 1992 and fall within the proposed baseline thresholds. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Production Estimate	Approved Program	Current Estimate
Source Selection Decision	AUG 81	N/A	AUG 81
Contract Award	JUL 82	N/A	JUL 82
Start FSED	FEB 85	N/A	FEB 85
Milestone II (DSARC)	NOV 87	FEB 85	FEB 85
First Full Funded Production Lot	JAN 88	JAN 88	JAN 88
Milestone IIIA (DAB)	NOV 87	JAN 89	JAN 89
Low-Rate Initial Production	N/A	JAN 89	JAN 89
First Flight	JUN 91	N/A	SEP 91
T-1 First Flight	N/A	JUN 91	SEP 91
IOC (Delivery of 12 A/C to sqdn) 1/	JUN 93	SEP 94	DEC 94(Ch-1)
Complete DT&E/IOT&E	JUN 93	N/A	N/A
DT&E			
Start	N/A	JUN 91	SEP 91
Complete	N/A	AUG 93	SEP 94(Ch-2)
IOT&E			
Start	N/A	JAN 93	JAN 94(Ch-2)
Complete	N/A	AUG 93	JUN 94(Ch-2)
Full Rate Production Contract Award		MAR 94	TBD
RM&AE (Formerly ORE)	N/A	NOV 94	JAN 95(Ch-1)
Milestone IIIB	SEP 93	TBD	JUL 95(Ch-1)
FOC	SEP 01	SEP 01	JUL 01

- Milestone IOC: Reflects delivery of 12th aircraft (P-16) to initial squadron. Full declaration of IOC will be a HQ AMC/CC decision based on the ability to commence operations.

b. Previous Change Explanations --

First Flight, IOT&E and DT&E, and Milestone IIIB FOC dates changed due to a rephasing of the C-17 assembly line. Delayed delivery of aircraft P-3 and P-4 to the test fleet slipped completion of test program, which supports the Milestone IIIB review (IOC changed from Jul 94 to Sep 94, Complete DT&E/IOT&E changed from Jun 93 to Aug 93, Milestone IIIB changed from Oct 94 to Dec 93, and FOC changed from Aug 99 to Feb 01).

First Flight changed from June 91 to September 91 based on the actual date of T-1 first flight. Complete DT&E/IOT&E, Milestone IIIB and FOC dates changed due to a rephasing of the C-17 assembly line and program restructure. The resulting delayed delivery of aircraft to the test fleet and a change in the interpretation of "DT&E Complete" to include completion of all-weather testing changed the DT&E/IOT&E Complete date to March 94. The completion of the test program supports the Milestone IIIB review.

9c. Schedule (Cont'd):

c. Current Change Explanations --

(CH-1) The IOC, RM&AE and Milestone IIIB dates changed due to a revised contract delivery schedule. IOC changed from Sep 94 to Dec 94, RM&AE changed from Oct 94 to Jan 95 and Milestone IIIB changed from TBD to Jul 95.

(CH-2) DT&E Complete, IOT&E Start, and IOT&E Complete dates changed due to the impact of late aircraft deliveries, deferred manufacturing work, immature aircraft systems, and less than planned flight test efficiency. DT&E complete changed from Dec 93 to Sep 94, IOT&E start changed from May 93 to Jan 94 and IOT&E complete changed from Nov 93 to Jun 94. Regarding dedicated IOT&E, the SPO has accomplished an initial bottoms up scrub of the flight test schedule. The next step in that process is to go through optimization to define the time span of dedicated IOT&E.

d. References --

Production Estimate:
Program Management Directive 0020(22), dated 10 May 89. Amended FY91 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated 20 February 1992.

10. Performance Characteristics:

a. Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Maintenance Manhours Per Flying Hour (Air Vehicle)	14.6	18.6	/ 20.0	N/A	16.28	(CH-1)
Mean Time Between Maintenance Inherent (hrs) (MTBMI)	1.69	1.61	/ 1.55	N/A	1.84	(CH-1)
Mean Time Between Maintenance Corrective (hrs) (MTBMC)	.83	.78	/ .75	N/A	.83	
Mean Time Between Removal (hrs) (MTBR)	5.37	2.8	/ 2.5	N/A	4.98	(CH-1)
Mean Manhours to Repair (hrs)	4.51	7.35	/ 7.35	N/A	5.88	(CH-1)

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Maximum Take-off Gross Weight (lbs) (TOGW)	580000	580000	/ 580000	580000	585000	(CH-2)
Maximum Payload (lbs)	172200	172200	/ 172200	N/A	172200	
Payload at Range (lbs @ 2400 nm) 1/	167006	160000	/ 160000	154322	160000	(CH-2)
Range Unrefueled (nm)	2372	N/A	/ N/A	N/A	2400	
Landing Field Length (ft) 2/	2541	2650	/ 2650	N/A	2596	(CH-3)
Takeoff Field Length (ft) 3/	7370	7600	/ 8500	N/A	7380	
Cruise Speed (Mach) (450 KTAS)	.77	.77	/ .74	.77	.77	
Backup Capability (% grade) 4/	2	2	/ 1.5	N/A	2	
Mission Completion Success Probability (%)	94	93	/ 92	N/A	94	

- The Demonstrated Performance and Current Estimate of Payload at Range based on the current projected aircraft operating weight and flight test based aerodynamic/propulsion model using typical operational mission planning rules. These rules include mission representative center of gravity, JP-8 fuel (at minimum specification properties), flying at optimum cruise mach, step cruise/climb, and credit for an enroute descent. Using the C-17 spec mission planning rules and Payload at Range estimate would be 150,225 lbs and the Current Estimate would be 157,866 lbs. These rules require JP-4 fuel, 99% optimum cruise mach, continuous cruise/climb, and no time/distance/fuel credit for an enroute descent.

- Reliability and maintainability is based on 100,000 fleet flying hours for Mission Completion Success Probability, Maintenance Manhours Per Flying Hour (Air Vehicle), Mean Time Between Maintenance Inherent (Hrs) (MTBMI), Mean Time Between Maintenance Corrective (Hrs) (MTBMC), Mean Time Between Removal (Hrs) (MTBR), and Mean Man Hours to Repair (HRS). The demonstrated R&M performance as of 5 Mar 93 and 50 production fleet flying hours is as follows: Maintenance Manhours Per Flying Hour = 47.2 (55.0 required by System Specification growth curves), MTBMI = 0.20 (0.53), MTBMC = 0.12 (0.26), MTBR = 1.00 (.92), and Mean Manhour to Repair = 3.10 (10.60).

- A 580,000 lb Take-off Gross Weight (TOGW) has been demonstrated during flight testing.

10a. **Performance Characteristics (Cont'd):**

FOOTNOTES:

1/ These calculations account for a max takeoff gross weight based on a 2.25G maneuver load factor, standard day conditions and C-17 spec fuel reserves (enroute, alternate, holding, approach and landing). Payload/Range is modified to show the the payload for the program has been decreased to account for government directed changes to the design of the C-17 aircraft. The Current Estimate for payload/range has been adjusted to account for the latest projected operating weight. In this and future reporting of payload/range deficiencies, we will be focusing on payload at the fixed range of 2400 NM.
The maximum design payload is 172,200 lbs, but the payload at the range of 2400 NM is 160,000 lbs.

2/ Maximum Effort Landing Field Length, with 3 engine idle reverse, 124,039 lb payload, fuel to fly a 500 NM mission with zero payload, sea level, 90 degree F day.

3/ Takeoff critical field length (sea level, 90 degrees F day) at the maximum takeoff gross weight for the System Specification mission.

4/ Backup capability with a 167,027 lb payload and fuel to fly 1000 NM, sea level, 90 degree F day.

b. Previous Change Explanations --

The current estimates for the Reliability, Maintainability and Availability parameters have been changed to account for the latest analyses and aircraft design.

The current estimate for the payload/range has been adjusted to account for the latest projected operating weight and drag. The reported payload/range is 909 lbs above the specification requirements as reflected by ECP 79 using the specification ground rules. In this and future reporting of payload/range deficiencies, we will be focusing on payload at the fixed range of 2400 NM.

Payload weight requirements have been changed to show that the payload for the program has been decreased to account for government directed changes to the design of the C-17 aircraft. The current estimate for the landing distance has been adjusted to account for the latest projected operating weight.

Refined estimate based on current data.

10c. **Performance Characteristics (Cont'd):**

c. Current Change Explanations --

(CH-1) The Current Estimates for the Reliability, Maintainability, and Availability parameters have been changed to account for the latest analyses and aircraft design. Maintenance Manhours Per Flying Hour changed from 16.25 to 16.28. Mean Time Between Maintenance Inherent changed from 1.87 to 1.84. Mean Time Between Removal changed from 4.83 to 4.98. Mean Manhours to Repair changed from 5.91 to 5.88.

(CH-2) The Current Estimate for Payload at Range has been changed from 160,909 lbs to 160,000 lbs to account for the latest analysis and aircraft design. This estimate assumes the following performance initiatives are successful.

An increase in the Maximum TOGW from 580,000 lbs to 585,000 lbs is a means of providing 5000 lbs of additional fuel. The contractor has agreed to incorporate this into the ongoing ground and flight test program. The increase in maximum TOGW should be cleared by the completion of the flight test program.

An effort is underway to evaluate potential aerodynamic changes to reduce aircraft drag. These changes are small, approximately 1.3% reduction in drag, but they can potentially improve aircraft range/payload performance by about 1600 lbs.

Weight savings achieved through execution of cost savings projects are estimated to produce approximately 1435 lbs in aircraft weight reduction.

A multiphase engine modification program by the engine vendor, Pratt and Whitney, improves specific fuel consumption by 0.6%, which translates to approximately 780 lbs of increased payload.

By including these four performance initiatives, the Current Estimate is 157,866 lbs. Additionally, a review of the computational ground rules called out by the specification is in progress. These ground rules are more stringent than actual operational procedures, producing conservative range/payload performance measures. By including the change in computational ground rules, the current estimate is 160,000 lbs. These differences are previously outlined in Section 10.a.

(CH-3) The Current Estimate for Landing Field Length has been adjusted from 2572 to 2596 to account for the latest projected operating weight and assumes current performance initiatives are successful.

10d. Performance Characteristics (Cont'd):

d. References --

Production Estimate:
Program Management Directive 0020(22), dated 10 May 89. Amended FY91 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated 20 February 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	3755.5	3913.3	3925.5
Procurement	18425.7	15084.0	17295.5
Flyaway	(15420.7)		(0.0)
Airframe			(12233.5)
Engines			(1642.7)
Avionics			(650.5)
Non-Recurring			(257.1)
Total Flyaway	(15420.7)		(14783.8)
Total Other Weapon System			(0.0)
Peculiar Support	(1213.6)		(1156.0)
Initial Spares	(1791.4)		(1355.7)
Construction (MILCON)	214.1	265.2	192.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 81 Base-Year $	22395.3	19262.5	21413.5
Escalation	19416.6	16539.5	18062.6
Development (RDT&E)	(1585.4)	(1661.1)	(1707.1)
Procurement	(17667.2)	(14679.2)	(16220.6)
Construction (MILCON)	(164.0)	(199.2)	(134.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	41811.9	35802.0	39476.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	210	120	120
Total	210	120	120

Note: Excludes 1 aircraft (T-1) that is fully configured as a test article. However, T-1 will not be reconfigured to the production configuration.

11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
Program Management Directive 0020(22), dated 10 May 89. Amended FY91 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated 20 February 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	39476.1	35802.0	39476.1
(2) Quantity	120	120	120
(3) Unit Cost	328.97	298.35	328.97
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	2041.2	2041.2	2378.2
Less CY Adv Proc	250.9	250.9	245.5
Plus PY Adv Proc	260.4	260.4	250.9
Net Total	2050.7	2050.7	2383.6
(2) Quantity	6	6	6
(3) Unit Cost	341.78	341.78	397.27

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5340.9	36092.9	378.1	41811.9
Previous Changes:				
Economic	-24.1	-332.3	-8.6	-365.0
Quantity	-	-11039.0	-	-11039.0
Schedule	-	+1884.4	-	+1884.4
Engineering	-	+21.9	-	+21.9
Estimating	+244.4	+4455.0	+94.9	+4794.3
Other	-	-	-	-
Support	+13.2	-1319.7	-	-1306.5
Subtotal	+233.5	-6329.7	+86.3	-6009.9
Current Changes:				
Economic	+22.6	-1332.6	-11.2	-1321.2
Quantity	-	-	-	-
Schedule	-	+553.3	-	+553.3
Engineering	+17.5	+69.4	-	+86.9
Estimating	+50.0	+3830.6	-125.8	+3754.8
Other	-	-	-	-
Support	-31.9	+632.2	-	+600.3
Subtotal	+58.2	+3752.9	-137.0	+3674.1
Total Changes	+291.7	-2576.8	-50.7	-2335.8
Current Estimate	5632.6	33516.1	327.4	39476.1

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	3755.5	18425.7	214.1	22395.3
Previous Changes:				
Quantity	-	-4778.3	-	-4778.3
Schedule	-	-	-	-
Engineering	-	+10.7	-	+10.7
Estimating	+151.1	+2177.6	+51.1	+2379.8
Other	-	-	-	-
Support	+6.7	-751.7	-	-745.0
Subtotal	+157.8	-3341.7	+51.1	-3132.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+10.5	+34.7	-	+45.2
Estimating	+22.3	+1918.4	-72.7	+1868.0
Other	-	-	-	-
Support	-20.6	+258.4	-	+237.8
Subtotal	+12.2	+2211.5	-72.7	+2151.0
Total Changes	+170.0	-1130.2	-21.6	-981.8
Current Estimate	3925.5	17295.5	192.5	21413.5

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Reestimated prime contract costs at ceiling for Air Vehicle, Test and System Engineering/Program Management and other government costs based on a comprehensive Annual Estimate completed prior to the Major Aircraft Review (MAR). Revised estimate of Air Vehicle, Systems Test and Evaluation, Site Activation and Industrial Facilities. Adjusted for current and prior year escalation change. Increased FY92 to fund the FSD portion of the 2108 contract to ceiling. Decreased funding IAW FY91 Defense Appropriations Act. Congressional delay of

13b. Cost Variance Analysis (Cont'd):

new DBOF activities which realigned funds from users to service agencies. Congressional funding reduction for Contractor Advisory and Asst. Services (CAAS), Contractor Travel, and FFRDC.

Support: Reestimated prime contract costs at ceiling for Training, Data and Peculiar Support Equipment, simulator and other government costs (Training and Data) based on a comprehensive Annual Estimate completed prior to the MAR. Revised estimate of Peculiar Support Equipment, Simulator, Training and Data. Adjusted for current and prior year escalation change. Revised requirements for the Maintenance Training Device and revised/rephased requirements based upon a new activation schedule for the C-17 Simulator. Revised Prior Year support requirements.

Procurement

Economic: Revised economic escalation indices.

Quantity: Deleted 90 aircraft.

Schedule: Changed schedule applicable to stretch-out of program. Revised procurement quantity for FY92 and FY93 from 6/12 to 4/8. Recategorized variance in the December 90 SAR from estimating to support.

Engineering: Added Defensive Systems (Defensive Avionics capability) to the C-17.

Estimating: Estimating changes applicable to a slower build-up rate and a revised Multiyear Procurement Strategy. Estimating changes applicable to deletion of 90 aircraft and a revised Multiyear Procurement Strategy. Reestimated Air Vehicle (Airframe, Engine and Avionics) costs and an extended the Multiyear Procurement Strategy based on a comprehensive Annual Estimate completed prior to the Major Aircraft Review (MAR).
Estimating changes applicable to a slower build up rate included in the revised schedule. Increased Recurring Airframe Multiyear Savings due to a change from a 3 year Multiyear Procurement strategy to a 4 year followed by a 2 year buyout. Increased Recurring Air Vehicle due to increase in subcontracts and manufacturing hours. Increased Airframe due to addition of Defense Business Operations Fund. Decreased Airframe and Non-recurring due to Prior Year adjustments and rephasing of requirements. Adjusted for current and prior year escalation change. Recategorized variance in the December 90 SAR. Revised estimate

13b. Cost Variance Analysis (Cont'd):

for total flyaway applicable to the buy profile change. Revised estimate due to a change from a 4-2 multiyear procurement strategy to a 3-2 multiyear strategy. Reestimated the total flyaway based on the Annual Estimate and funding adjustments. Decreased total flyaway due to delay of new DBOF activities and realignment of funds from users to service agencies. Decreased total flyaway due to decreased funding to support CAAS and Contractor Travel.

Support: Deleted Peculiar Support Equipment, Training, Data and Initial Spares in addition to incorporation of a revised Multiyear Procurement Strategy associated with the quantity reduction of 90 aircraft. Reestimated Peculiar Support Equipment Training and Data due to revised requirements in comprehensive Annual Estimate completed prior to the MAR. Decreased Airframe, Avionics and Engine Spare parts factor for estimating Initial Spares based on a comprehensive Annual Estimate completed prior to the MAR. Included Multiyear Procurement Strategy to Initial Spares estimate detailed in comprehensive Annual Estimate completed prior to the MAR. Increased Initial Spares Multiyear Procurement Savings due to a change from a 3 year Multiyear Procurement Strategy to a 4 year followed by a 2 year buyout. Incorporated support changes applicable to stretchout of program schedule. Increased Initial Spares due to addition of Defense Business Operations Fund. Net impact of rephased PSE, Training, Data and Initial Spares requirements. Adjusted for current and prior year escalation change. Revised support requirements associated with the revised schedule. Decreased Initial Spares due to the impact of the Appropriation Bill. Incorporated and rephased Initial Spares stock funding. Increased Initial Spares due to the deletion of Multiyear Procurement for all years. Reestimated Peculiar Support Equipment, Training, Data and Spares requirements based on the Annual Estimate and funding adjustments. Decreased Initial spares due to delay of new DBOF activities and realignment of funds from user to service agencies. Decreased Initial Spares due to decrease in funding for Contractor Advisor Assistant Services (CAAS). Increased support requirements due to realignment of ICS funds from O&M to Procurement. Increased Initial

13b. Cost Variance Analysis (Cont'd):

Spares due to requirements for war readiness spares kits (WRSK).

MILCON

Economic: Revised economic escalation indices.

Estimating: Decreased Military construction projects applicable to the deletion of 90 aircraft. Adjusted for current and prior year escalation change. Increased estimate due to rephased buy and delivery schedule. Realigned funding for support activities to the C-17 program.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	+22.6
Adjustment for current and prior year escalation change (Estimating)	-16.0	-22.3
Adjustment for current and prior year escalation change (Support)	-1.7	-2.4
Revised Estimate for the development of the Airlift Defensive Systems (ADS) Program (Engineering)	+10.5	+17.5
Revised estimate of Mission Support, Test and Site Activation based on the 92 Annual Estimate and realignment of funds to reflect actual requirements (Estimating)	+10.7	+17.0
Incorporation of alternate Live Fire Test Program in accordance with FY93 public law (Estimating)	+23.6	+40.0
Revised estimate for restructured flight test program extension (Estimating)	+49.9	+86.0
Revised program requirements resulting from extended Flight test program, site activation, incorporation of IWSM concept and miscellaneous contractual adjustments (Estimating)	+29.8	+53.4
Revised estimate due to Congressional reductions for Omnibus reprogramming (Estimating)	-69.7	-110.6

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Revised estimate due to Congressional reductions (inflation, general reductions and travel) and miscellaneous DoD program adjustments (Estimating)	-6.0	-13.5
Revised to reflect actual requirements for data and training. (Support)	-18.9	-29.5
RDT&E Subtotal	+12.2	+58.2
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-1332.6
Adjustment for current and prior year escalation change (Estimating)	+51.3	+93.1
Adjustment for current and prior year escalation change (Support)	+7.9	+14.3
Additional inflation adjustment (Estimating)	-77.6	-103.4
Revised Schedule for FY93 - FY01 from buy profile 8-12-18-18-18-18-14 to 6-6-8-12-15-15-16-16-12		
(Schedule)	N/A	+553.3
(Estimating)	+1052.9	+2630.8
(Support)	+54.1	+210.2
Revised Estimate for TACAN and the Airlift Defensive Systems (ADS) program (Engineering)	+34.7	+69.4
Adjustment for unobligated expired funds		
(Estimating)	-51.5	-86.9
(Support)	-31.0	-52.4
Additional procurement liability due to the contract -2108 separate ceilings (Estimating)	+86.5	+139.5
Revised estimate due to miscellaneous program funding adjustments (Estimating)	-69.7	-137.4
Added recurring Air Vehicle due to DoD program adjustment of spares (Estimating)	+15.1	+28.8
Reestimate of total flyaway based on the 92 Annual Estimate (Estimating)	+649.9	+1352.9

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Escalation adjustments associated with new base (92 Annual Estimate and buy profile changes)		
(Estimating)	+261.5	-86.8
(Support)	+50.1	+18.3
Revised estimate due to deletion of FY93 spares funding in the Appropriations Bill (Support)	-63.6	-115.6
Revised requirements for spares (Support)	-15.1	-28.8
New requirement for Common Support Equipment due to IWSM (Support)	+48.8	+93.9
Reestimate of requirements based on the 92 Annual estimate (Support)	+207.2	+492.3
Procurement Subtotal	+2211.5	+3752.9
(3) MILCON		
Revised economic escalation indices (Economic)	N/A	-11.2
Adjustment for current and prior year escalation change (Estimating)	-0.3	-0.4
Realignment of funding for support activities to the C-17 program (Estimating)	-72.4	-125.4
MILCON Subtotal	-72.7	-137.0

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
189.30	-16.62	--	5.04	1.82	13.77	--	5.80	9.81	199.11

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions) (Cont'd)

b. Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
199.10	-14.05	57.34	20.31	0.91	71.24	--	-5.89	129.86	328.97

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15. **Contract Information** (Then-Year Dollars in Millions):

a. RDT&E --

C-17 FSED:
MCDONNELL DOUGLAS, LONG BEACH, CA
F33657-81-C-2108, FPIF
Award: July 23, 1982
Definitized: December 31, 1985

Initial Contract Price		
Target	Ceiling	Qty
$31.6	$31.6	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$4248.5	$4900.8	1	$5558.7	$5997.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1561.6	$-65.2
Cumulative Variances To Date (01/31/93)	$-1672.5	$-73.0
Net Change	$-110.9	$-7.8

Explanation of Change:

COST VARIANCE: The cumulative cost variance is due to the underestimation of assembly tool design, weight reduction measures, rework & engineering changes. The assembly tools for the C-17 program require much more sophisticated technology than past programs. Thus, there was no prior history on which to base an estimate. The weight reduction measure caused redesign of the structures area and also caused MDA (McDonnell Douglas Aerospace) to implement a significant amount of supplier change. Weight reduction measures also caused the use of overtime to minimize schedule impact. The rework and engineering changes were caused by design, software definition problems, and other areas related to performance specifications. The current cost overrun is driven by unanticipated work in Structural Design and Ground Test due to the Static wing failure, extensive overtime in support of Flight Test, and the use of

15. Contract Information (Cont'd):
extensive amounts of manpower to support the planned November start of the Durability test program. Additionally, the majority of the current cost variance occurred in overhead. This was caused by the variance in the direct labor hours to which different overhead rates are applied. This variance has been favorably impacted by the de-scoping of subcontractor effort on engines and cut-plies.

SCHEDULE VARIANCE: The cumulative schedule variance is due to the low ratio of credit flight hours to actual flight hours, late receipt of Flight Test material requirements and repair of fuel leaks, late availability of airframes for Durability and Static, rework and engineering changes, and the delayed receipt of various software and computer systems. The current schedule variance is attributable mainly to the overall late condition of the Flight Test program caused by delayed and cancelled flights attributable to various aircraft systems problems and fuel leaks and also to the low ratio of credit flight hours to actual flight hours. The current variance has been favorably impacted by the rebaselining that occurred to align MDA internal schedules with contractual schedules.

IMPACT: The cost variance is indicative of this effort exceeding ceiling as reflected in the program manager's estimate. The cumulative schedule variance is indicative of the overall late condition of aircraft deliveries and has been the major contributor to the delayed flight test schedule.

- The target price is the negotiated cost plus the authorized unpriced work at cost plus profit. This value does not reflect the target price as estimated in the contractor's Cost Performance Report. The target price has increased by $4.1M since the last SAR due to miscellaneous contract modifications.

- The ceiling price is the negotiated ceiling on the contract plus any authorized unpriced work estimated at 130% of target cost. The ceiling price decreased by $12.2M since the last SAR due to the separate ceiling contract modification.

- The Contractor's Estimated Cost at Completion has increased by $242.9M due to their Annual Comprehensive Estimate at Completion and includes their estimate for the Static wing failure along with monthly updates reflected in their Cost Performance Report.

- The Program Manager's Estimated Cost is the unconstrained estimate of the FSED program based on the SPO's FY93 Annual Estimate. This estimate is being updated to include flight test extension, wing fixes and 1993 OSD inflation rates and has increased by $504.0M. The Program Manager's estimate reflects a reversal of $268.4M of sustaining engineering costs pending resolution of this issue by the

15. Contract Information (Cont'd):
DPRO/DCAA while the contractor's estimate does not.

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b. Procurement --
C-17 Lot I:
MCDONNELL-DOUGLAS, LONG BEACH, CA
F33657-81-C-2108, FPIF
Award: January 20, 1988
Definitized: January 13, 1988

Initial Contract Price		
Target	Ceiling	Qty
$656.3	N/A	2

Current Contract Price		
Target	Ceiling	Qty
$696.3	$804.1	2

Estimated Price At Completion	
Contractor	Program Manager
$920.4	$961.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-268.2	$-33.0
Cumulative Variances To Date (01/31/93)	$-294.4	$-8.6
Net Change	$-26.2	$24.4

Explanation of Change:

COST VARIANCE: The cumulative cost variance is attributable to the disruption is assembly flow as a result of late part deliveries, the underestimation of assembly tools due to lack of comparable data, and engineering design changes due to weight reduction and safety of flight issues. Currently, the cost variance is caused by correction of an error in overhead actuals in the Production Center Operations and by poor performance due to the Reduction-in-Force at MDA and the subsequent relearning that occurred. Overhead continues to aggravate the cost overrun with variances in direct labor hours to which different overhead rates are applied. The variance has been favorably impacted by the de-scoping of subcontractor effort on engines and cut-plies.

SCHEDULE VARIANCE: The cumulative schedule position has been improving. The remaining variance is related to late receipt of Support Equipment, parts shortages from Outside Manufacturing and Supplier Management, engineering changes in the Doors area and redesign effort on the skin and edge flaps. The current schedule continues to be positive as past due work is accomplished. The variance was favorably impacted by the rebaselining that occurred to align MDA internal schedules with contractual schedules.

IMPACT: The cost variance is indicative of this effort exceeding ceiling as reflected in the program manager's estimate. The cumulative schedule variance is indicative of the overall late

15. Contract Information (Cont'd):
condition of aircraft deliveries. Since P-1 - P-2 are flight test aircraft, late delivery of these aircraft have impacted the flight test program.

- The target price is the negotiated cost plus authorized unpriced work at cost plus profit. The target price has increased by $40.9M to reflect contract modifications since the last SAR.

- The ceiling price is the negotiated ceiling on the contract plus any authorized unpriced work estimated at 130% of target cost. The ceiling price increased by $47.5M to reflect contract modifications since the last SAR.

- The Contractor's Estimated Cost at Completion has increased by $72.7M due to their Annual Comprehensive Estimate at Completion and includes their estimate for the Static wing failure along with monthly updates reflected in their Cost Performance Report.

- The Program Manager's Estimated Cost is the unconstrained estimate of the Lot I program based on the SPO's FY93 Annual Estimate. This estimate is being updated to include wing fixes and 1993 OSD inflation rates and has increased by $90.0M. The Program Manager's estimate reflects a reversal of $85.8M of sustaining engineering costs from Lot I to FSED pending resolution of the engineering cost charging issue by the DPRO/DCAA, while the contractor's estimate does not.

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C17 Lot II Prod:
MCDONNELL-DOUGLAS, LONG BEACH, CA
F33657-81-C-2108, FPIF
Award: July 28, 1989
Definitized: July 28, 1989

Initial Contract Price		
Target	Ceiling	Qty
$757.3	N/A	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$865.1	$998.4	4	$1214.2	$1130.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-218.1	$-100.3
Cumulative Variances To Date (01/31/93)	$-409.8	$-14.6
Net Change	$-191.7	$85.7

Explanation of Change:

COST VARIANCE: The unfavorable cumulative cost variance is still due

15. Contract Information (Cont'd):
to the allocation of sustaining engineering costs from FSED. Unplanned demand for Raw Materials and Purchase Parts in support of critical path items on earlier shipsets is also impacting Lot II. Scope changes for weight reduction, form, fit and function, rework and expending extra effort to recover schedule have had a negative effect on the cumulative cost variance from the Intercomponents (ICWO) area. Currently, the cost variance is due to the production areas where the behind schedule condition of earlier ships in flow is now driving costs up. Also a Reduction-in-Force in the commercial segment of the company has caused the bumping of employees from the government segment and the subsequent re-learning required to perform on the C-17 production flow has increased costs. In addition, overtime for rework and repair as well as attempts to recover schedule is driving costs higher.

SCHEDULE VARIANCE: The cumulative effect of the prioritization of earlier vehicles since the inception of Lot II has been the primary driver behind the cumulative schedule position. The contractor has concentrated effort on recovering schedule and has improved since last report. The delay in delivery of instruments and special equipment hardware such as the Mission Computer, EFCS, and the Warning & Caution Computer in Supplier Management and the overall late condition of earlier shipsets in Production is the primary driver of the existing behind schedule condition. In the current period schedule variance we see steady improvement as the contractor recovers schedule at the expense of added costs.

IMPACT: The cost variance is indicative of this effort exceeding ceiling as reflected in the Program Manager's Estimate. The cumulative schedule variance is indicative of the overall late condition of aircraft deliveries. Since P-3 - P-4 are flight test aircraft, late delivery of these aircraft is impacting the flight test program.

- The target price is the negotiated cost plus the authorized unpriced work at cost plus profit. The target price has increased by $18.6M to reflect contract modifications since the last SAR.

- The ceiling price is the negotiated ceiling on the contract plus any authorized unpriced work estimated at 130% of target cost. The ceiling price increased by $19.9M to reflect contract modifications since the last SAR.

- The Contractor's Estimated Cost at Completion has increased by $261.4M due to their Annual Comprehensive Estimate at Completion along with monthly updates reflected in their Cost Performance Report.

15. **Contract Information (Cont'd):**
- The Program Manager's Estimated Cost is the unconstrained estimate of the Lot II program based on the SPO's FY93 Annual Estimate and has increased by $41.0M. This estimate is being updated to include wing fixes and 1993 OSD inflation rates. The Program Manager's Estimate reflects a reversal of $182.6M of sustaining engineering costs from Lot II to FSED pending resolution of this engineering cost charging issue by the DPRO/DCAA, while the contractor's estimate does not.

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C17 Lot III Prod:
McDonnell-Douglas, Long Beach, CA
F33657-89-C-0001, FPIF
Award: July 1, 1991
Definitized: July 1, 1991

Initial Contract Price		
Target	Ceiling	Qty
$1026.2	$1215.0	4

Current Contract Price		
Target	Ceiling	Qty
$1026.2	$1215.0	4

Estimated Price At Completion	
Contractor	Program Manager
$1187.0	$1119.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-12.3	$-24.3
Cumulative Variances To Date (01/31/93)	$-66.6	$-67.3
Net Change	$-54.3	$-43.0

Explanation of Change:

COST VARIANCE: Performance has been under plan since the inception of Lot III in Production due to the prioritization of earlier ships in the production flow and the effect on the learning process resulting from the bumping of more experienced MDA government employees to make way to MDA commercial segment employees with more seniority. Problems with the JEDAV built tooling for the Main Landing Gear pods related to required clearance cuts and access holes have added increased costs. Some of the MDA produced vacuum tools had to be repaired due to damage in transit. Engineering changes activity is causing increased tooling requirements in the Component Management area. Formal implementation of the formal tooling charge practices is continuing to effect cost. Continued fabrication difficulties are causing excessive parts and material usage and high scrap which is also driving costs higher. In addition, the offload of effort from Long Beach and the closing of the Torrance plant is causing some cost escalation.

SCHEDULE VARIANCE: The overall late condition of previously procured ships in production is impacting the schedule along with the cumulative effect of unplanned engineering changes and priority work

15. Contract Information (Cont'd):
on earlier shipsets. The late delivery of P-7 - P-9 ribs and bulkheads has a negative impact as well. A shortage of parts for the Mission Computer was one of the major drivers early in the program along with late hardware deliveries resulting from late tooling transfers to suppliers from MDHC related to the flap hinge fairing and the pod panels. Also, the Main Landing Gear is delayed due to problems during the plating process. Parts received late and incorrectly configured from Tulsa and Macon; late release of tool orders in PCO; the closing of the C6 - Torrance Facility (Fabrication center); and related off-load activities are causing delays on Lot III production aircraft.

IMPACT: Continued schedule problems in Lot III may ultimately cause escalating costs and possible delays in aircraft delivery dates which may impact initial squadron deployment. The delivery schedule has been reset to reflect the behind schedule condition of the contractor and to adjust production schedules for a more efficient flow considering reduced quantities in the out years.

- The target price is the negotiated cost plus the target profit.

- The ceiling price is the negotiated ceiling on the contract plus any authorized unpriced work estimated at 135% of target cost.

- The contractor's Over Target Baseline (OTB) was approved and is included in the contractor's estimate at completion. To date, most of the OTB has been incorporated into the contractor's Latest Revised Estimate at the subdivisional level with the exception of the $9M for warranty. About half has been distributed into lower level budgets.

- The Program Manager's Estimate reflects the rejournalling of the sustaining engineering effort back to FSED from production Lots I and II while the contractor's estimate does not. This situation also applies to Lot III. This practice will continue pending resolution of this issue by DPRO/DCAA/SPO.

- The Contractor's Estimated Cost at Completion has increased by $93.0M due to their Annual Comprehensive Estimate at Completion and monthly updates reflected in their Cost Performance Report.

- The Program Manager's Estimated Cost at Completion has decreased by $9.0M due to the incorporation of the FY93 Program Office Annual Estimate. This estimate is being updated to include wings fixes and 1993 OSD inflation rates.

** Section 15 is FOR OFFICIAL USE ONLY **

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 52.0% (13 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 32.8% ($12953.6 / $39476.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2005)	Total
RDT&E	5323.9	180.4	87.1	41.2	5632.6
Procurement	7482.3	2378.2	3209.8	20445.8	33516.1
MILCON	147.4	15.2	49.7	115.1	327.4
O&M	-	-	-	-	-
Total	12953.6	2573.8	3346.6	20602.1	39476.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1981				32.0	33.4	33.4	33.4	11.9
1982								9.2
1983				51.0	59.6	59.6	59.6	4.9
1984				22.1	26.8	26.8	26.8	3.8
1985				96.5	121.0	121.0	121.0	3.4
1986				272.9	350.4	350.4	350.4	2.8

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1987				465.7	625.5	625.5	625.5	2.7
1988				796.2	1103.6	1103.6	1103.3	3.0
1989				651.9	933.5	933.5	918.1	4.2
1990				602.2	896.7	896.5	887.4	4.0
1991				484.0	746.8	737.6	719.3	4.3
1992				162.4	256.8	239.9	59.0	2.8
1993				104.9	169.8	111.1	1.6	2.4
1994				108.9	180.4			2.4
1995				51.4	87.1			2.3
1996				13.0	22.5			2.3
1997				4.5	8.0			2.2
1998				3.3	5.9			2.2
1999				2.6	4.8			2.2
Subtot				3925.5	5632.6	5238.9	4905.4	
Appropriation: 3010 Aircraft Procurement, Air Force								
1987		17.5	23.0	40.5	61.2	61.2	61.2	2.7
1988	2	50.9	397.6	462.4	733.4	733.4	727.1	3.1

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1989	4	9.5	583.8	723.4	1186.3	I186.3	838.6	4.2
1990	4	45.2	605.5	821.6	1387.7	1387.7	786.3	4.0
1991		50.7	33.9	147.7	260.0	192.8	46.1	4.3
1992	4	17.6	810.6	1019.4	1812.5	1025.1	211.8	2.8
1993	6	1.4	1051.1	1122.2	2041.2	67.4		2.4
1994	6	21.1	1013.9	1278.6	2378.2			2.4
1995	8	40.8	1428.1	1688.5	3209.8			2.3
1996	12	2.4	1686.9	1970.6	3828.9			2.3
1997	15		1513.2	1740.1	3455.8			2.2
1998	15		1346.8	1543.0	3132.2			2.2
1999	16		1698.5	1890.7	3921.3			2.2
2000	16		1502.4	1667.9	3536.0			2.2
2001	12		831.4	977.9	2119.2			2.2
2002				100.0	221.4			2.2
2003				64.8	146.7			2.2
2004				26.7	61.8			2.2
2005				9.5	22.5			2.2
Subtot	120	257.1	14526.7	17295.5	33516.1	4653.9	2671.1	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3300 Military Construction, Air Force								
1989				3.9	5.7	5.7	4.8	4.2
1990				3.2	5.0	4.5	4.5	4.0
1991				18.5	29.5	25.6	23.0	4.3
1992				47.2	76.1	72.8	36.0	2.8
1993				18.8	31.1			2.4
1994				9.0	15.2			2.4
1995				28.8	49.7			2.3
1996				25.0	44.1			2.3
1997								2.2
1998				24.6	45.3			2.2
1999				6.6	12.4			2.2
2000				6.9	13.3			2.2
Subtot				192.5	327.4	108.6	68.3	
Grand Total	120	257.1	14526.7	21413.5	39476.1	10001.4	7644.8	

Obligations and expenditures reflected in Section 16c are as of 12 March 1993.

17. **Production Rate Data:**

a. Production Baseline Rate

Low rate initial production approval was received on 18 January 89 for FY 1989-90 procurement (4 aircraft in FY89 and 6 aircraft in FY90) and advance procurement in FY90 and FY91. As a result of the FY90 Congressional action, the C-17 program was cut to four aircraft in FY90 bringing the revised total of low rate initial production aircraft to 10.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	2432.4	2378.2	2378.2	+54.2	0.0
Procurement Qty	6	6	6	0	0
Proc. Unit Cost	405.400	396.367	396.367	+9.033	0.000
FY 1995					
Procurement Cost	2380.0	3209.8	3209.8	-829.8	0.0
Procurement Qty	6	8	8	-2	0
Proc. Unit Cost	396.667	401.225	401.225	-4.558	0.000
Balance of Proc. (FY 1996 to Complete)	36256.6	20445.8	26033.8	+15810.8	+5588.0

- The current estimate rate equals the maximum economic rate. The funded delivery period for the current estimate and maximum economic estimate is as follows: FY88-2, FY89-9, FY90-6, FY91-0, FY92-6, FY93-9, FY94-11, FY95-14, FY96-12, FY97-12, FY98-12, FY99-12, FY00-12, and FY01-9.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	1/1
Procurement	6/5

- The above information reflects deliveries as of 13 Apr 93.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operations is a total of 120 aircraft, 102 PAA, 8 trainers, and 10 BAI. These aircraft are split between eight operational squadrons, with each PAA flying 1432 hours per year, and one flying training squadron. They will be located at four AMC bases. Aircraft maintenance will be done under a primarily two-level concept. The aircraft will be operated under the active/associate reserve concept, with a crew ratio of 3.0 active and 2.0 associate reserve. This estimate is an average of the total program costs divided by the estimated life and spread over the total of nine squadrons. The estimate includes direct, indirect, and acquisition and training costs, as detailed below.

(1) Direct costs include: unit mission personnel, O&S consumables, depot maintenance, and sustaining investment costs. Unit mission personnel consist of aircrew, base maintenance, wing/squadron overhead, and weapon system security personnel. O&S consumables include fuel and base maintenance supplies necessary to operate the aircraft. Depot costs include airframe and engine overhaul, repair of component parts, modifications kit installation, airframe inspection, and software support. Sustaining investment costs include replenishment spares and repair parts, replacement support equipment, and class IV modification kits.

(2) Indirect costs include: installation support personnel, non-pay additives, and depot non-maintenance costs. Installation support personnel include base operating support, real property maintenance, and medical personnel. Non-pay additives cover medical supplies, permanent change of station, and miscellaneous operating expenses. Depot non-maintenance costs include general depot support costs and second destination transportation charges.

(3) Personnel acquisition and training costs include personnel acquisition, maintenance trainer contract support, aircrew training system contracted support, individual and specialty training.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1981 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Squadron	Avg Annual Cost for Antecedent System
Unit Mission Personnel	14.9	N/A
O&S Consumables	43.5	N/A
Depot Level Maintenance	6.5	N/A
Sustaining Investment	14.3	N/A
Install. Supt. Personnel	1.6	N/A
Indirect Personnel Supt.	3.6	N/A
Depot Non-Maintenance	2.8	N/A
Personnel Acq & Training	4.4	N/A
Total	91.6	N/A

This average is based on the total life cycle O&S costs from the FY92 Program Office Estimate, adjusted to reflect the 94 Budget Estimate Submission buy/delivery profile. This adjusted total was then divided by 36 years (11 years of phase-in and 25 years of steady state operations) and then divided 9 squadrons (8 active/associate reserve and 1 training squadron).

The average annual cost per squadron for FY92 ($91.6 million) is lower than the FY91 ($98.0 million) estimate. The majority of this decrease is associated with a slight decrease in installation support personnel requirements, better information upon which the depot related costs were estimated, a change in method for computing replacement support equipment, and transferring interim contract support to the acquisition portion of the estimate.

There is no antecedent system for the C-17 program. The C-17 will augment the C-5 and C-141 in intertheater deployment and the C-130 with intratheater operations.

c. Contractor Support Costs -- None.

AF-9. DMSP

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92-0465

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: DMSP

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
MAY 19 1993
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
DMSP Block 5D-2 Improved/5D-3/Defense Meteorological Satellite Program

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
DMSP Office
SMC/CI
2420 Vela Way Suite 1467
Los Angeles AFB, CA 90245-4659

Col John A. Goyette
Assigned: March 30, 1990
AV 833-4333 COMM (310) 336-4333

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0305160F
PROCUREMENT:
APPN 3020 ICN MS0554 (Air Force)
APPN 3080 ICN 833340 (Air Force)

93 580

[redacted]

MASTER
SAF/PAS

93-214

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4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 0305160F

5. (U) Related Programs: None.

6. (U) Mission and Description:
The mission of DMSP is to provide an enduring and survivable capability, through all levels of conflict consistent with the survivability of the supported forces, to collect and disseminate global visible and infrared cloud data and other specialized meteorological, oceanographic, and solar-geophysical data required to support worldwide DoD operations and high-priority programs. Timely data are supplied to Air Force Global Weather Central, the Navy Fleet Numerical Oceanography Center, and to deployed tactical terminals worldwide. The DMSP system is the only DoD meteorological satellite system. It consists of two three-axis stabilized satellites in 450 nautical mile sun-synchronous polar orbits (98.7 degrees inclination), command readout stations, command and control facilities, strategic data processing facilities, worldwide fixed and mobile tactical terminals, and communication satellite links. The DMSP Block 5D-2 Improved (S11-14)/5D-3 (S15-20) systems replace the Block 5D-2 system which has completed production and is operational. One Block 5D-2 Improved satellite was launched in Dec 91 and is operational.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The Defense Meteorological Satellite Program is a Joint-Service program in accordance with the Memorandum of Agreement on Joint Service Management and Operations, dated 15 December 1976. The program supports all military services. This is a continuing program. RDT&E funding will allow evolutionary development of spacecraft and sensors as necessary to support new requirements of the special strategic missions, the Joint-Service mission, and the Joint Chiefs of Staff. In Sep 83, DMSP awarded a multiyear procurement contract for 5D-2 Improved spacecraft S11-14; a second multiyear procurement contract for the four primary sensors 5D-3 Operational Linescan Systems (OLS) was awarded in Jan 84. Delivery of satellites S11-14 was completed in Nov 90; delivery of the four OLSs was completed in May 89. In Nov 91, Satellite F-11 (S-12) was launched from Vandenberg AFB; F-11 was turned over to AFSPACECOM in Dec 91. In FY 85, Headquarters Air Force directed that an additional 5D-3 production spacecraft (S-20) be procured. A contract was awarded for 5D-3 development spacecraft (S-15) in Jul 86; Critical Design Review (CDR) was completed in Dec 87; in Dec 91, S-15 was delivered. In Sep 88 a contract for five 5D-3 Operational Linescan Systems was awarded; Preliminary Design Review (PDR) and Mission

7a. (U) Program Highlights (Cont'd):

Readiness Review (MRR) for the OLS hardware were completed in Mar 90. The Bench Test Model for OLS units 17 through 21 was delivered in Dec 90. Congressional approval for the multiyear procurement of five 5D-3 spacecraft was received in Sep 88; the contract was awarded in Jun 89; the "fact of life" delta CDR for spacecraft S16-20 occurred in Jun 90. In Dec 91, funding was provided for the build of satellites S-19 and S-20 on the multiyear contract. A competitive contract to provide independent software verification and validation was awarded in May 91. Congress approved transition from Atlas to Titan II with Titan II initial launch capability in Oct 90; Titan II Pathfinder was successfully completed in Jul 90.

Four microwave imager sensors (SSM/I) and one magnetometer (SSM) were delivered in CY 89. In Mar 89 a contract for the Special Sensor Microwave/Imager Sounder (SSMIS) was awarded; System Design Review (SDR) was completed in Jun 89; in May 90 the hardware PDR for the SSMIS was held; CDR was completed in Sep 91. The Special Sensor Ultraviolet Spectographic Imager (SSUSI) successfully completed SDR in Feb 91 and the Special Sensor Ultraviolet Limb Imager (SSULI) sucessfully completed PDR in May 91.

In Jan 86, the Fairchild Satellite Operations Center (FSOC) contract was awarded; the FSOC building was accepted by the Corps of Engineers in Dec 86; certification for the start of IOT&E occurred in Mar 89 and AFSPACECOM declared IOC in Aug 89; Program Management Responsibility Transfer (PMRT) to AFLC occurred in Oct 89. The Satellite Data Handling System (SDHS) was turned over to Air Force Global Weather Central (AFGWC) in FY 86; a contract for shared processing for the SDHS was awarded in Sep 88; SDHS Site III turnover was accomplished in May 89. C3 Sites I, II, and V were turned over to AFSPACECOM. PMRT of Mark IIa and IIIs occurred in Jul 87; PMRT of the C3 system occurred in Oct 88. The Multi-Purpose Satellite Operations Center (MPSOC) upgrade was placed on contract in Sep 88 and CDR occurred in Aug 89. In Feb 90, AFSCN/DMSP Internet installation was completed at the FSOC and MPSOC; Interim Satellite Operations Center (ISOC) installation at MPSOC was completed in Mar 90. MPSOC and the Internet terrestrial communications system were turned over to AFSPACECOM for operational use in Jul 91; PMRT to AFLC followed in Oct 91. The Mark IV was turned over to MAC in Mar 88 and PMRT of the Mark IV Tacterms occurred in Apr 88. PMRT to MAC of the SDHS and the Data Reconstruction Site occurred in Nov 89. This completed the turnover and transfer of all operational assets to the operating and supporting commands and thus makes DMSP the first "normalized" major space program.

The contract for Mark IVB Tactical Terminals was awarded in Oct 88; SDR occurred in Mar 89, PDR in Jul 89, and CDR in Nov 89. The first

7a. (U) Program Highlights (Cont'd):

antenna for the Mark IVB Tactical Terminals was delivered by the subcontactor and the first imagery through the system was accomplished in Jun 90. Stability tests for the developmental Mark IVB Tactical Terminal were successfully completed in Dec 91; Formal Qualification Test was completed in Jan 92. The New Hampshire Command Readout Station (NHS/BOSS) modification to the remote tracking station to allow receipt and relay of DMSP data and bent-pipe commanding of DMSP satellites was awarded in Aug 89; CDR was completed in Nov 89. In Nov 90, two contracts for the procurement of Rapid Deployment Imagery Terminals (RDIT) were awarded; first article delivery occurred in Jan 91; a follow-on contract option for the production of five more RDITs was exercised in Feb 91; deliveries were completed in Jun 91. RDIT was a High Gear program in support of Desert Storm.

b. (U) Significant Developments Since Last Report --
Critical Design Reviews (CDR) for the Space Sensor Ultraviolet Limb Images (SSULI) and for the Space Sensor Ultraviolet Spectographic Imager (SSUSI) were held on 23 Apr 92 and 16 Jul 92, respectively. CDR for Mission Sensor Integration onto satellites S16 through S20 was conducted on 27-28 Jul 92. Preliminary Design Review (PDR) for the SSJ/5, proton and plasma detector, was held on 13 Jul 92; CDR followed on 16 Oct 92. Mark IVB Tactical Terminal IOT&E began on 30 Mar 92 and was completed successfully on 28 May 92. The contract production option for six fixed Mark IVB systems was exercised on 19 Jun 92. On 2 Apr 92, the Internet Extension which allows operation of the Control Files Database (CFDB) at the Vandenberg Payload Test Facility from other Internet nodes, was turned over to AFSPACECOM. A Request for Proposal (RFP) for the Small Tactical Terminal was issued on 21 Aug 92; two contracts were awarded in Dec 92.

The DMSP system is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --
The S-16 primary sensor, Operational Linescan System (OLS) 17, was delivered on 25 Feb 93.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 5 Jan 93) breaches or Nunn-McCurdy unit cost breaches.

9. (U) **Schedule**:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
SATELLITE			
Block 5D-2 Improved Production Start (S-11)	SEP 83	SEP 83	SEP 83
S-15 Design Contract Award	NOV 85	N/A	JUL 86
Satellite Delivery			
S-11	JUL 87	DEC 88	DEC 88
S-12	N/A	NOV 89	OCT 89
S-13	N/A	AUG 90	AUG 90
S-14	N/A	NOV 90	NOV 90
S-15 (Block 5D-3)	N/A	SEP 91	DEC 91
Satellite Availability			
S-11	N/A	DEC 89	DEC 88(Ch-1)
S-12	N/A	SEP 90	OCT 89(Ch-1)
S-13	N/A	JUN 91	AUG 90(Ch-1)
S-14	N/A	JUN 92	NOV 90(Ch-1)
S-15 (Block 5D-3)	N/A	SEP 93	DEC 91(Ch-1)
Award of Block 5D-3 Multiyear Procurement	N/A	MAY 89	JUN 89
Initial Titan II Capability	N/A	OCT 90	OCT 90
IOC			
Block 5D-2 Improved (S-11)	TBD	N/A	DEC 91
Block 5D-3 (S-15)	TBD	N/A	TBD
PRIMARY SENSOR			
Design Contract Award (S-11)	SEP 82	SEP 82	SEP 82
Production Contract Award (S12-S15)	JAN 84	JAN 84	JAN 84
Production Contract Award (S16-S20)	N/A	SEP 88	SEP 88
S-16 Primary Sensor Delivery	N/A	SEP 92	FEB 93(Ch-2)
GROUND SYSTEMS			
Thule Command Readout Station			
(1) Operational	SEP 87	N/A	FEB 88
(2) Deactivate Loring CRS	SEP 88	N/A	APR 90
Fairchild Satellite Operations Center (FSOC) Operational	SEP 87	MAY 89	AUG 89
Award Mark IVB Contract	N/A	OCT 88	OCT 88
Mark IVB IOT&E	N/A	OCT 91	MAR 92
Begin Mark IVB Production	N/A	JAN 92	JUN 92
Final Mark IVB Delivery	N/A	SEP 97	SEP 97
SYSTEM			
DMSP System Milestone IV	N/A	SEP 97	JUL 95(Ch-3)

Note: Block 5D-2 Improved/Block 5D-3 IOC will occur 30 days after launch (completion of on-orbit checkout). As DMSP launches on demand, no firm estimate is currently available.

9b. (U) **Schedule (Cont'd)**:

b. (U) Previous Change Explanations --

Fairchild Satellite Operations Center IOC slipped from Sep 88 to May 89 due to delay in contract award. Spacecraft S-15 design contract award slipped from May 86 to Jul 86 when additional technical evaluation of the proposal was required. S-11 delivery slipped from Jul 87 to Dec 88 due to materials problems, late delivery of piece-parts, diversion of manpower to support two launches, and late delivery of Government furnished equipment. Thule Command Readout Station (CRS) slipped from Sep 87 to Feb 88 due to S-Band Downlink Capability modification. Deactivation of Loring CRS slipped from Sep 88 to Apr 90 by determination of AFSPACECOM. Delivery dates for Spacecraft S12-15 adjusted due to increased satellite on-orbit lifetime. FSOC Operational slipped from May 89 to Aug 89 due to the non-availability of critical spares. Award of the 5D-3 multiyear contract slipped from Mar 89 to Jun 89 due to protracted negotiations. Required Availability deleted from the baseline. Satellite S-12 delivered a month ahead of estimate due to efficient test cycle. Delivery of satellite S-15 slipped from Sep 91 to Dec 91 due to manufacturing and test problems. IOC for Block 5D-2 Improved was changed from TBD to Dec 91 because the first satellite in the block became operational. S-16 Primary Sensor delivery slipped from Sep 92 to Nov 92 due to late subcontractor piece parts deliveries. Begin Mark IVB IOT&E slipped from Sep 90 to Oct 91 due to PMD amendment adding Mission 22 and development problems; a further slip to Mar 92 was due to software integration problems impacting system stability; this delay caused Mark IVB Production Start to slip from Feb 91 to Jun 92 and Final Delivery to slip from Sep 95 to Sep 97. Milestone IV slipped from Sep 93 to Sep 97 due to delay of program. Milestone IV was then accelerated from Sep 97 to Jun 93 due to an Air Force determination that Milestone IV was more appropriately held prior to significant risk reduction activity (FY93) versus prior to Engineering Development (FY97).

c. (U) Current Change Explanations --

Ch-1 Satellite Availability dates have been changed from TBD to the delivery date for each of the S-11 through S-15 satellites. Satellite Availability was originally defined as the projected 50% need date for a satellite based on the Generalized Availability Program (GAP) and was included in the baseline documentation to aid in an assessment of the significance of any slip in satellite delivery. Since satellites S-11 through S-15 have all been delivered and are all currently available to be prepared for launch, their delivery dates are appropriate as availability dates.

Ch-2 S-16 Primary Sensor delivery slipped from Nov 92 to Feb 93 due

9c. (U) Schedule (Cont'd):
to problems encountered during thermal vacuum test.

Ch-3 DMSP System Milestone IV slipped from Jun 93 to Jul 95 due to the rescheduling of the Air Force Requirements Summit.

d. (U) References --

(U) Production Estimate:
PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 05 January 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Satellite					
Altitude (+/-20 nm)	450	N/A		N/A N/A	450
Inclination (+/-.15 degrees)	98.7	N/A		N/A	98.7
Mean Mission Duration (months)					
5D-2 Improved	33	48	/ 30	N/A	39
5D-3	42	60	/ 30	N/A	42
Early Orbit Checkout (days)					
5D-2 Improved	30	30	/ 30	19	30
5D-3	30	30	/ 30	N/A	30
Primary Sensor					
Global Resolution (km)	2.78	2.78	/ 2.78	2.78	2.78
Theater Resolution (km)	.56	.56	/ .56	.56	.56
Mark IVB Tactical Terminals					
Mean Time Between Corrective Maintenance Actions (MTBCMA) (hrs)	720	705	/ 705	N/A	705
Mean Time to Repair (MTTR) (hrs)	1	1	/ 1	N/A	1
Mean Time Between False Alarm (MTBFA) (hrs)	20000	20000	/ 20000	N/A	20000

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mean Time Between Critical Failures (MTBCF)(hrs)	2000	1945	/ 1945	N/A	1945
Maintenance Manhours per Operating Hour (MMH/OH)	.0233	.0233	/ .0233	N/A	.0233
Inherent Availability	.9995	.9995	/ .9995	N/A	.9995
Fraction of Failures Isolated by Built-In Test (%)	90	90	/ 90	N/A	90
Survivability					

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

Previous entry for Early Orbit Checkout allowed up to 90 days in a transfer orbit for Space Shuttle launch; program has transitioned to an ELV. Survivability parameters are included to reflect the DAE Baseline. Mark IVB data replaced Mark IV data in the 30 Jun 89 SAR. Mean Time Between Corrective Maintenance Actions and Mean Time Between Critical Failures for the Mark IVB system decreased from 720 to 705 hours and 2000 to 1945 hours, respectively, due to the addition of Mission 22. The Block 5D-2 Improved Mean Mission Duration estimate increased from 33 to 39 months based on historical experience with similar satellites.

c. (U) Current Change Explanations -- None.

10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Production Estimate:
PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 05 January 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	224.5	224.9	239.2
Procurement	491.6	545.0	545.3
Launch Vehicle	(26.0)		(7.2)
Spacecraft	(201.3)		(215.7)
Primary Sensor	(79.6)		(86.4)
Mission Sensors	(57.1)		(75.2)
Support	(48.9)		(64.7)
Total Flyaway	(412.9)		(449.2)
Ground System	(58.0)		(83.7)
Field Level Support	(19.8)		(0.0)
Total Other Wpn Sys	(77.8)		(83.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.9)		(12.4)
Construction (MILCON)	2.6	3.0	2.7
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 75 Base-Year $	718.7	772.9	787.2
Escalation	1160.3	1251.1	1260.8
Development (RDT&E)	(318.1)	(299.6)	(336.7)
Procurement	(839.1)	(948.2)	(921.1)
Construction (MILCON)	(3.1)	(3.3)	(3.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1879.0	2024.0	2048.0
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	8	9	9
Total	9	10	10

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 05 January 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2048.0	2078.2	2048.0
(2) Quantity	10	10	10
(3) Unit Cost	204.80	207.82	204.80
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	44.3	44.3	46.2
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	44.3	44.3	46.2
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) **Cost Variance Analysis**:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	542.6	1330.7	5.7	1879.0
Previous Changes:				
Economic	-23.4	-103.0	-0.2	-126.6
Quantity	-	+190.2	-	+190.2
Schedule	-	+1.9	-	+1.9
Engineering	-13.6	-70.4	-	-84.0
Estimating	+40.7	+74.9	-	+115.6
Other	-	-	-	-
Support	+33.0	+68.9	+0.2	+102.1
Subtotal	+36.7	+162.5	-	+199.2
Current Changes:				
Economic	-7.1	-25.4	-	-32.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.8	-3.2	-	-0.4
Other	-	-	-	-
Support	+0.9	+1.8	-	+2.7
Subtotal	-3.4	-26.8	-	-30.2
Total Changes	+33.3	+135.7	-	+169.0
Current Estimate	575.9	1466.4	5.7	2048.0

13a. (U) **Cost Variance Analysis (Cont'd):**

a. (U) Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	224.5	491.6	2.6	718.7
Previous Changes:				
Quantity	-	+61.2	-	+61.2
Schedule	-	-	-	-
Engineering	-5.2	-24.8	-	-30.0
Estimating	+6.4	+0.4	-	+6.8
Other	-	-	-	-
Support	+12.5	+16.6	+0.1	+29.2
Subtotal	+13.7	+53.4	+0.1	+67.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.8	-0.5	-	+0.3
Other	-	-	-	-
Support	+0.2	+0.8	-	+1.0
Subtotal	+1.0	+0.3	-	+1.3
Total Changes	+14.7	+53.7	+0.1	+68.5
Current Estimate	239.2	545.3	2.7	787.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Developed satellite autonomy capability; added new wind sensor technology effort but requirement later withdrawn; de-scoped survivability of 5D-3 spacecraft (S-15); increased vacuum ultraviolet (SSUV) sensor development authorized, but authority later withdrawn.

Estimating: Adjustments to correct current & prior year escalation; adjustments to current & prior years to reflect actuals; definitized Titan II ELV contract as 5D-3 booster; definitized 5D-3 development spacecraft (S-15) contract; re-estimate of 5D-3

13b. (U) Cost Variance Analysis (Cont'd):

development effort and performance incentives; adjustment of on-orbit performance incentives for projected launch date; additional development for wind measuring sensor; reduction resulting in delay of spacecraft (S-15) and primary and missions sensors and decrease in technical support; added funding for Titan II launch vehicle integration; revised estimate for spacecraft and sensor support and service effort; revised estimate of sensor calibration/validation costs; decreased estimate of program management and technical support; increase for system engineering; decrease in spacecraft and sensor studies; revised estimate for microwave imager/sounder development; extension of support and service activities for two years due to delay of follow-on program.

Support: Increase in Automated Weather Product Driver System application; deleted Shuttle-Launch Base requirement; upgrade of deployed DMSP tactical terminals and development of a new combat tactical terminal added; increase to C3 and DMSP tactical terminal upgrade requirements; revised estimate for development of new combat tactical terminal; increased cost for launch and on-orbit checkout for spacecraft S-15 and related launch and on-orbit costs; adjustment to Mark IVB development effort; adjustment to tactical terminal development estimate due to design problems; launch facility improvements due to space policy security requirements; revised estimate of launch facility improvement costs; revision to system engineering support for ground systems; revised estimate of ground system engineering studies; reprioritization of Tactical Data Processing requirements by user; re-estimate of small tactical terminal development.

Procurement

Economic: Revised escalation indices.

Quantity: Add one 5D-3 satellite (S-20) due to extension of Block 5D-3 program.

Schedule: Restructure of multiyear procurement of Block 5D-3 spacecraft S16-20.

Engineering: Descoped survivability and added classified sensor to S16-20 spacecraft; added requirement for solar x-ray imager sensor (SXI); funding for SXI withdrawn.

Estimating: Adjustments to correct current and prior year escalation; adjustments to current & prior years to

13b. (U) Cost Variance Analysis (Cont'd):

reflect actuals; funding reallocated to complete spacecraft S8-10 which are not included in SAR; extension of 5D-3 program; transition to Titan II ELV as 5D-3 booster; funding for Titan II launch vehicle refurbishment for DMSP S16-20 transferred to Space Boosters Program (PE 35119F); fully funded buy of S16-20 and associated primary sensors restructured as a multiyear procurement; revised estimate of OLS and spacecraft (for S16-20) using Jun 85 cost data; upgraded production/test equipment model for primary sensor (OLS 13-21); integration funding for this added in FY 87; descoped merger of two mission sensors and re-estimated mission sensor mix in Jun 85 for S16-20; acceleration of water vapor profiling capability; loss of advance material buy funding for primary sensor; restructure of primary sensor buy from multiyear procurement to fully funded annual buy; revised estimate for technical support and mission sensor contingency; refinement of estimate for restructuring multiyear procurement of Block 5D-3 spacecraft S16-20; definitization of procurement of primary sensor OLS 17-21; re-estimate of special sensor buy as a competitive procurement; refinement of estimate for procurement of space and environmental sensors; definitization of multiyear procurement of spacecraft S16-20; adjustment of spacecraft and primary sensor incentives to projected year of payment; extension of Block 5D program due to follow-on delay; directed transfer of support and launch effort funding from operations and maintenance to missile procurement.

Support: Adjustments to correct current and prior year escalation; adjustments to current and prior years to reflect actuals; refinement of Multi-Purpose Satellite Operations Center (MPSOC) upgrade requirement; revised estimate of initial spares requirement; increased cost for replacement of out-dated site equipment; definitization of DMSP tactical terminal upgrade requirements; tactical terminal cost growth; re-estimate for DMSP connectivity to New Hampshire tracking station; reprogramming of spares funding; refined estimate for Mark IVB site prep/shelter procurement; revised estimate for replacement of site equipment using off-the-shelf equipment; revised estimate of Small Tactical Terminal procurement including revised

13b. (U) Cost Variance Analysis (Cont'd):
user requirements; adjustment to FFRDC funding; directed transfer of ground system support efforts from operations and maintenance to missile procurement.

MILCON
Economic: Revised escalation indices.
Support: Adjustments to correct current and prior year escalation; adjustments to prior year to reflect actuals.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation rates. (Economic)	N/A	-7.1
Current and prior year adjustment for escalation. (Estimating)	-0.5	-1.2
Current and prior year adjustment for actuals. (Estimating)	-0.7	-1.8
Reestimate of spacecraft and sensor support and service activities. (Estimating)	+0.3	+0.8
Increase to program management and technical support efforts. (Estimating)	+1.7	+5.0
Revised estimate for Mark IVB development. (Support)	+0.7	+2.0
Reestimate of small tactical terminal enhancements. (Support)	-0.5	-1.1
RDT&E Subtotal	+1.0	-3.4
(2) Procurement		
Revised economic escalation rates (Economic)	N/A	-25.4
Adjustment to current and prior year escalation. (Estimating)	+1.1	+2.6
Current and prior year adjustment for actuals. (Estimating)	+0.4	+0.8
Revised estimate of technical support (Estimating)	-1.1	-3.5
Adjustment of on-orbit performance incentives to project year of launch. (Estimating)	-0.8	-2.8

13c. (U) **Cost Variance Analysis (Cont'd)**:

	(Dollars in Millions) Base-Year	Then-Year
Revised estimate of factory/field support efforts. (Estimating)	-0.1	-0.3
Adjustment to current and prior year escalation (Support)	+0.2	+0.7
Current and prior year adjustment for actual cost. (Support)	+1.0	+2.2
Revised allocation for initial spares. (Support)	+1.6	+4.7
Withdrawal of funding for one Mark IVB terminal and site preparation. (Support)	-1.4	-3.9
Reestimate of Mark IVB production. (Support)	-0.6	-1.9
Procurement Subtotal	+0.3	-26.8

14. (U) **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
208.78	-15.91	-1.86	0.19	-8.40	11.52	--	10.48	-3.98	204.80

15. (U) **Contract Information** (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) SSMI/S:	Initial Contract Price Target	Ceiling	Qty
Aerojet Electrosystems Co, Azusa, CA F04701-89-C-0036, FPIF/CP Award: March 17, 1989 Definitized: March 17, 1989	$62.1	$66.3	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$86.1	$92.3	5	$116.1	$116.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-17.4	$-2.6
Cumulative Variances To Date (02/27/93)	$-19.8	$-1.9
Net Change	$-2.4	$0.7

15. (U) **Contract Information (Cont'd):**

Explanation of Change:

The increase of $0.6M in the current contract price and ceiling is due to a contract modification for the acquisition of additional special test equipment.

The estimated price at completion includes both the fixed price production effort and the cost plus development effort on the contract. The estimated price for the fixed price portion is constrained by the ceiling of $72.6M which is the limit of the government's liability on the production effort. Also included in the estimated price at completion is $0.4M in award fees earned, $2.5M in potential award fees, and $4.3M in potential on-orbit performance incentives. Neither award fees nor incentives are included in the current contract price data.

Increase in cost variance is due to cost growth in the production effort for higher than planned level of effort support for procurement and material management. The contractor has experienced a higher than average cost per engineering change notice due to the modification of piece part specifications to support alternate vendors and provide greater schedule flexibility. In addition, increased labor and material costs have been experienced in manufacturing planning and operations support to develop and expedite work around plans and to shorten response time to planning changes. There is no significant impact to the contract or program at this time.

Schedule variance has improved with the near completion of the design effort and as a result of the over target baseline, which was approved in Mar 92 and resulted in a schedule adjustment of +$1.5M. No significant impact to the contract or program is anticipated at this time.

b.(U) Procurement --

(U) 5D-3 OLS:	Initial Contract Price		
	Target	Ceiling	Qty
Westinghouse Elec Corp, Baltimore, MD F04701-88-C-0118, FPIF/AF Award: September 19, 1988 Definitized: September 19, 1988	$55.0	$61.1	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$110.7	$123.2	5	$123.4	$128.5

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.2	$-3.1
Cumulative Variances To Date (02/28/93)	$-4.0	$-2.1
Net Change	$0.2	$1.0

Explanation of Change:

The increase of $3.3M in the current target and of $3.7M in the ceiling is due to contract modifications for cables/boards, 5-BIT T-Channel, RDS encryption units, Bench Test Model compatibility and the procurement of a spare photomultiplier tube.

The change in the estimated price at completion results from the incorporation of the contract modifications, significant labor rate adjustments, and correction of an error in computation of potential award fees. The estimated price at completion includes $2.2M in award fees earned, $3.2M in potential award fees, and $7.3M in potential on-orbit performance incentives. Neither award fees nor incentives are included in the current contract price data.

Cost variance is due to process transition to build specialty devices in house and increased inspection activities due to bulk delivery of piece parts for all flight units. The Bench Test Model development effort and acceleration of the operational amplifier production also contributed to the cost growth. No significant impact to the contract or program is anticipated.

The improvement in schedule variance is due to an accelerated effort in unit production. A minor schedule impact to deliveries of the first four flight units is anticipated. There is no impact to the program as the first unit, Operational Linescan System unit 17, was delivered in Feb 93 and is not required for integration onto spacecraft S-16 until Aug 93.

(U) 5D-3 SPACECRAFT:
Martin Marietta Corp, Princeton, NJ
F04701-89-C-0029, FPIF/AF
Award: June 30, 1989
Definitized: June 30, 1989

Initial Contract Price		
Target	Ceiling	Qty
$228.2	$250.2	5

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$271.1	$297.2	5	$291.8	$303.8

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$7.6	$-4.1
Cumulative Variances To Date (02/28/93)	$8.0	$-11.2
Net Change	$0.4	$-7.1

Explanation of Change:

The increase to the current contract target and ceiling prices is due to contract modifications for mission sensor integration, the advanced flight vehicle simulation facility, and battery plate buy-off.

The increase to the estimated price at completion is due to incorporation of the contract modifications, expected labor rate impacts, and problems associated with the welded solar array, age-sensitive items, and real time data smooth issues. The estimated price at completion includes $2.5M in award fees earned, $8.6M in potential future award fees, and $16.6M in potential on-orbit performance incentives. Neither award fees nor incentives are included in the current contract price data.

The increase in the positive cost variance is due to the applied direct cost of materials being less than budgeted and greater efficiency in the accomplishment of milestones. No impact to the program is anticipated.

The increase in schedule variance is due to problems in the manufacture of the welded solar array and delays in implementing Real Time Data Smooth (RDS) because of frequency allocation issues. No impact to the program is anticipated.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 63.2% (12 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 76.1% ($1558.9 / $2048.0)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	412.6	24.4	21.7	117.2	575.9
Procurement	1140.6	46.2	46.0	233.6	1466.4
MILCON	5.7	-	-	-	5.7
O&M	-	-	-	-	-
Total	1558.9	70.6	67.7	350.8	2048.0

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1982				8.4	15.5	15.5	15.5	9.2
1983				8.7	16.8	16.8	16.1	4.9
1984				9.8	19.6	19.6	19.5	3.8
1985				18.4	37.9	37.9	36.2	3.4
1986				24.1	50.9	50.8	45.5	2.8
1987				26.6	58.8	58.7	50.2	2.7
1988				15.9	36.3	36.2	34.2	3.0
1989				19.2	45.3	45.3	45.3	4.2
1990				18.0	44.0	44.0	34.5	4.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1991				17.8	45.2	45.2	36.7	4.3
1992				9.7	25.2	24.5	13.0	2.8
1993				6.4	17.1	9.6	0.5	2.4
1994				9.0	24.4			2.4
1995				7.8	21.7			2.3
1996				8.0	22.8			2.3
1997				7.8	22.7			2.2
1998				8.2	24.4			2.2
1999				8.3	25.2			2.2
2000				7.1	22.1			2.2
Subtot	1			239.2	575.9	404.1	347.2	

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Appropriation: 3020 Missile Procurement, Air Force

1982				7.0	14.4	14.4	14.6	9.6
1983	2	3.8	65.1	68.8	150.7	150.7	142.8	9.0
1984		3.7		13.3	30.3	28.7	28.3	8.0

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
1985	2	4.2	85.6	54.3	127.6	127.6	125.4	3.4
1986		4.0	17.1	16.1	39.5	39.5	36.1	2.8
1987		3.6		6.9	17.5	17.5	17.5	2.7
1988		2.7		25.9	68.5	68.5	49.5	3.0
1989	1	2.7	52.1	57.4	157.3	157.3	65.2	4.2
1990	1	5.2	46.4	41.6	117.4	117.4	61.6	4.0
1991	1	5.2	44.0	50.2	147.7	139.0	37.3	4.3
1992	2	4.8	83.5	35.5	105.3	100.9	56.9	2.8
1993		2.3		10.2	30.9	26.0	0.2	2.4
1994		2.3		9.5	29.4			2.4
1995		2.1		9.3	29.4			2.3
1996		2.0		9.2	29.7			2.3
1997		1.8		8.8	29.0			2.2
1998		1.5		8.7	29.4			2.2
1999		1.6		8.7	29.9			2.2
2000		2.0		10.2	35.9			2.2
Subtot	9	55.5	393.8	451.6	1219.8	987.5	635.4	

16c. (U) **Program Funding Summary (Cont'd):**
FY 86 recurring amount is for primary and mission sensors for the development spacecraft (S-15).

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Appropriation: 3080 Other Procurement, Air Force

1983				3.7	7.5	7.5	7.1	4.9
1984				6.3	13.1	12.6	12.6	3.8
1985				13.3	28.7	25.7	27.5	3.4
1986				4.1	9.3	4.9	20.7	2.8
1987				3.0	6.9	5.2	6.1	2.7
1988				4.3	10.4	8.5	7.9	3.0
1989				6.5	16.3	15.0	16.5	4.2
1990				0.5	1.2	0.8	0.7	4.0
1991				7.1	18.7	17.2	2.8	4.3
1992				2.9	8.0	5.3		2.8
1993				4.8	13.4			2.4
1994				5.9	16.8			2.4
1995				5.7	16.6			2.3
1996				5.3	15.7			2.3
1997				5.1	15.5			2.2
1998				5.0	15.6			2.2
1999				4.7	15.0			2.2
2000				5.5	17.9			2.2
Subtot				93.7	246.6	102.7	101.9	

16c. (U) Program Funding Summary (Cont'd):

Expenditures are greater than obligations due to accounting and finance office posting errors.

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Appropriation: 3300 Military Construction, Air Force

1985				2.7	5.7	5.7	5.7	3.4
Subtot				2.7	5.7	5.7	5.7	
Grand Total	10	55.5	393.8	787.2	2048.0	1500.0	1090.2	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Production rate is less than six or more in any two fiscal years, therefore production information is not required.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		46.2		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		46.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		233.6		N/A	N/A

Production rate is less than six or more in any two fiscal years, therefore production information is not required.

17c. (U) Production Rate Data (Cont'd):

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	1/1
Procurement	4/4

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Operations and support costs include all costs of operating, maintaining, and supporting the DMSP spacecraft from dedicated ground control centers at Fairchild AFB WA (Fairchild Satellite Operations Center) and Offutt AFB NE (Multi-Purpose Operations Center). Costs also include the costs for contractor support for sustaining engineering and the operations personnel at each of the operations centers. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 5D-2 Constellation	Avg Annual Cost Per (Antecedent)
Operations & Maintenance	11.2	N/A
Military Personnel	13.1	N/A
Other Procurement	2.4	N/A
Total	26.7	N/A

No antecedent system for the Block 5D-2 Improved/5D-3 meteorological satellite exists.

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	124.4	---	---	---	124.4
Total	124.4	---	---	---	124.4

The O&M Support Costs include funding for sustaining engineering and launch for satellites S-11 through S-20 beginning with the delivery of S-11 in FY 1989 and estimated through FY 2000. Beginning in FY 1993, higher headquarters approved the transfer of funding for sustaining engineering and launch to the Missile Procurement appropriation.

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AF-10 DSP

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: DSP

AS OF DATE: December 31, 1992

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AS AMENDED
MAY 2 4 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Defense Support Program - Strategic Surveillance and Warning Satellite System (DSP)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

SMC/MJ
185 DISCOVERER BLVD.
SUITE 2512
LOS ANGELES AFB, CA 90245-4695

COL JOHN R. KIDD
Assigned: August 1, 1989
AV 833-1150 COMM (310) 363-1150

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0102431F, 0305911F
PROCUREMENT:
APPN 3020 ICN MS0647 (Air Force)
APPN 3080 ICN 833100 (Air Force)

~~Classified by: [illegible]~~
~~Declassify on: OADR~~
~~Downgrade Instructions:~~

SAF/PAS
93-313 -T

(THIS PAGE IS UNCLASSIFIED)

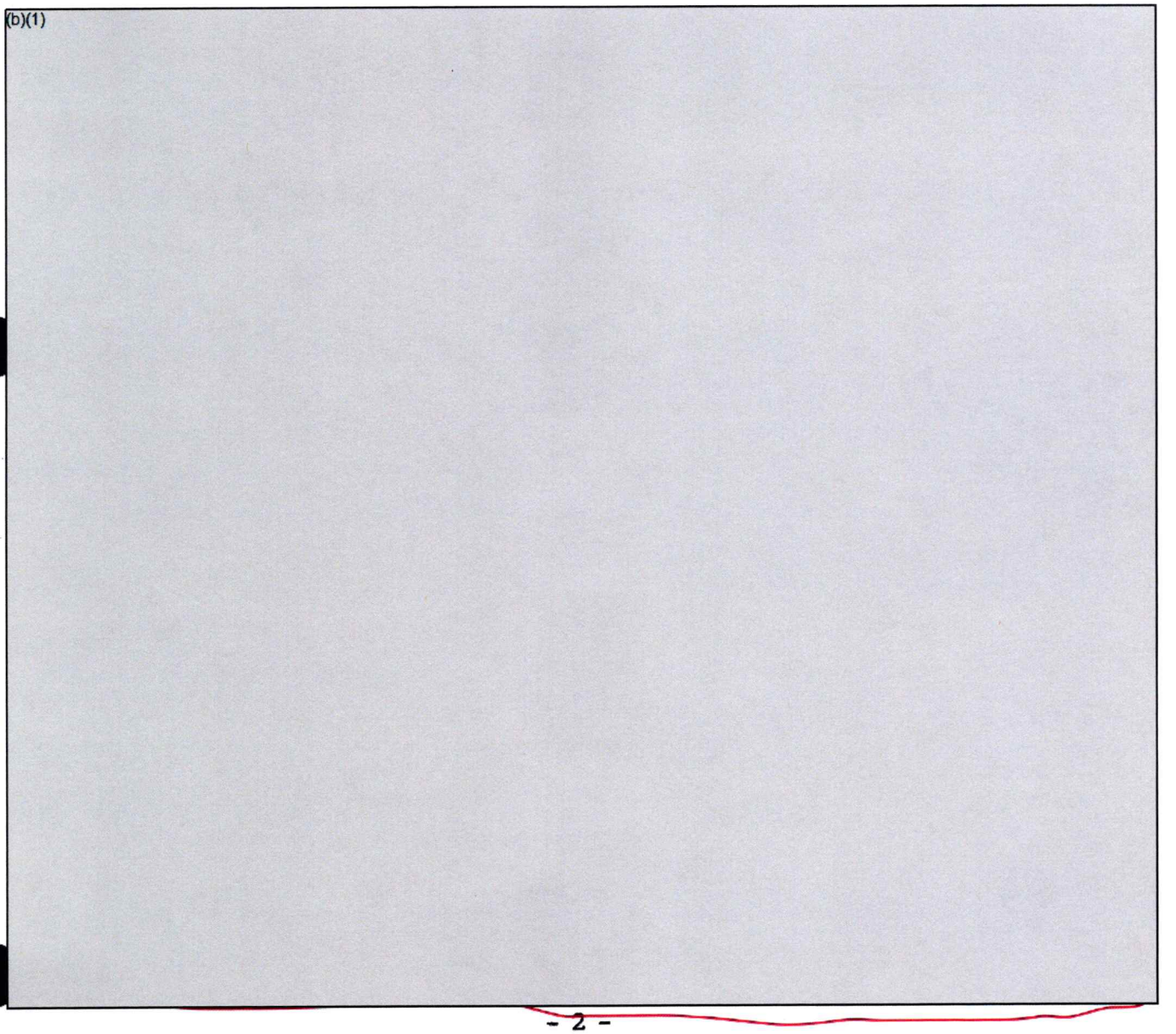
~~SECRET~~ OASD(PA) DFOI 93 485

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 0102431F, 0305911F

5. (U) Related Programs:
Jam Resistant Secure Communications Terminals (JRSCT); Milstar Satellite Communications System (MILSATCOM); Defense Satellite Communication System (DSCS); Follow-on Early Warning System (FEWS); Survivable Communications Integrated System (SCIS); Titan IV; Inertial Upper Stage (IUS).

(b)(1)



(b)(1)

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(b)(1)

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b. (U) Significant Developments Since Last Report --
(U) DSP continues to pursue a multi-year procurement of Satellites 23-25 in FY93-97.

(U) The System 1 software upgrade and Ground Computer Change-out for the ground sites were terminated for convenience and official contract termination notices were delivered on 15 December 1992.

(U) Mobile Ground Terminals 3 and 4 were accepted by the user on 24 November 1992. Mobile vehicles 5 and 6 upgrades started 2 December 1992.

(U) The Satellite Systems Read-Out Upgrade (SRSU) system demonstration was successfully conducted on 2 December 1992.

(U) The first Laser Crosslink Subsystem (LCS) flight unit #3 was delivered on 23 November 1992. Integration of LCS #3 on Satellite 17 was completed December 1992.

The DSP system is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --
The Central Tactical Processing Program (CTPP) completed it's Initial Installation phase on 15 January 1993 by successfully processing data from a pair of DSP satellites.

The DSP Program Office will be consolidated with the FEWS Program Office to form the new Space Based Early Warning System Program Office in April 1993.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 16 February 1992) breaches or Nunn-McCurdy unit cost breaches.

The System 1 Complete RDT&E and the System 1 Delivery to CGS (Shelter Installation) breached the approved APB which was reported in the 30 September 1992 SAR. These milestones are no longer applicable because the System 1 contract was terminated for convenience by the government on 15 December 1992.

(b)(1)

(b)(1)

[redacted]

(U) System 1 complete RDT&E and System 1 delivery to CGS (Shelter Installation) milestones have slipped from November 1992 and July 1993, respectively, to December 1994.

c. (U) Current Change Explanations --

(Ch-1) The System 1 Complete RDT&E and the System 1 Delivery to CGS (Shelter Installation) are no longer applicable. The System 1 contract was terminated for convenience by the government on 15 December 1992.

d. (U) References --

(U) Development Estimate:
PMD # NO.R-S 4047 (24) Oct 18, 1983; SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984. FY85 RDT&E Descriptive Summaries, January 1984.

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 16 February 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

(b)(1)

DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate

[redacted]

10a. (U) Performance Characteristics (Cont'd):

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

b. (U) Previous Change Explanations --

(b)(1)

c. (U) Current Change Explanations -- None.

10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Development Estimate:
PMD # NO.R-S 4047 (24) Oct 18, 1983; SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984. FY85 RDT&E Descriptive Summaries, January, 1984.

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 16 February 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1304.3	1618.3	1646.9
Procurement	3094.6	4307.2	4399.5
Flyaway	(2364.4)		(3461.6)
Other Weapon Systems	(730.2)		(14.7)
Peculiar Support	(0.0)		(856.9)
Initial Spares	(0.0)		(66.3)
Construction (MILCON)	25.7	25.5	25.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 78 Base-Year $	4424.6	5951.0	6071.9
Escalation	1123.0	3189.6	3234.9
Development (RDT&E)	(-30.4)	(263.6)	(322.0)
Procurement	(1151.6)	(2924.0)	(2910.9)
Construction (MILCON)	(1.8)	(2.0)	(2.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	5547.6	9140.6	9306.8
b. (U) Quantity --			
Development (RDT&E)	4	4	4
Procurement	15	21	21
Total	19	25	25

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
PMD # NO.R-S 4047 (24) Oct 18, 1983; SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984.

11e. (U) Total Program Cost and Quantity (Cont'd):
FY85 RDT&E Descriptive Summaries, January, 1984.

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 16 February 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	9306.8	9551.0	9306.8
(2) Quantity	25	25	25
(3) Unit Cost	372.27	382.04	372.27
b. (U) Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	298.2	298.2	498.6
Less CY Adv Proc	48.0	48.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	250.2	250.2	498.6
(2) Quantity	0	0	1
(3) Unit Cost	N/A	N/A	498.60

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1273.9	4246.2	27.5	5547.6
Previous Changes:				
Economic	-12.8	-82.1	-0.1	-95.0
Quantity	-	+2349.0	-	+2349.0
Schedule	+0.4	+156.2	-	+156.6
Engineering	-	-	-	-
Estimating	+373.6	+381.0	+0.1	+754.7
Other	-	-	-	-
Support	+289.4	+416.2	-	+705.6
Subtotal	+650.6	+3220.3	-	+3870.9
Current Changes:				
Economic	-5.3	-122.2	-	-127.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+49.7	-69.1	-	-19.4
Other	-	-	-	-
Support	-	+35.2	-	+35.2
Subtotal	+44.4	-156.1	-	-111.7
Total Changes	+695.0	+3064.2	-	+3759.2
Current Estimate	1968.9	7310.4	27.5	9306.8

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1304.3	3094.6	25.7	4424.6
Previous Changes:				
Quantity	-	+1033.8	-	+1033.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+174.3	+93.9	-0.2	+268.0
Other	-	-	-	-
Support	+149.1	+191.8	-	+340.9
Subtotal	+323.4	+1319.5	-0.2	+1642.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.2	-28.7	-	-9.5
Other	-	-	-	-
Support	-	+14.1	-	+14.1
Subtotal	+19.2	-14.6	-	+4.6
Total Changes	+342.6	+1304.9	-0.2	+1647.3
Current Estimate	1646.9	4399.5	25.5	6071.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.
Adjustment for negative program change related escalation.

Schedule: Delay in integration effort due to launch standdown.

Estimating: Adjustment for current and prior inflation.
Changes associated with software upgrades to support Satellites 14-17.
Acquisition strategy change for Laser Crosslink Subsystem (LCS).
Cost changes associated with Satellite Readout Station Upgrade (SRSU), development delays in

13b. (U) Cost Variance Analysis (Cont'd):

Mobile Ground Terminal (MGT).
Reprogramming of FY90-92 funds due to delay of System 1.
Revised estimate due to cancellation of DSP-2 upgrade.
Restoration of fixed and mobile ground efforts.
Transfer of funding from DSP to FEWS program.

Support: Integration and other program level efforts to support the acquisition of an added satellite.
Hardware and software upgrades for ground stations.
Increased cost for Ground System Upgrade (GSU).

Procurement

Economic: Revised economic escalation indices.
Adjustment for program change related escalation.

Quantity: Acquisition of additional satellites in FY89-93.
Decrease of one satellite from 26 to 25.

Schedule: One year delay in procurement of Satellite 18.
Two year delay for Satellite 19.
Production delay for Satellites 23-26.
Slip buy of Satellites 23-25 from FY91 to FY92.

Estimating: Adjustment for current and prior inflation.
Revised procurement strategy (two in FY88 versus one each in years FY87-88).
Allocation of cost change since the baseline.
Change in acquisition strategy associated with MYP vice annual long-lead funding.
Refinement of program estimate to reflect change from DSP-2 to DSP-1 satellites and new spacecraft.
Adjustment of FY87 funds to reflect actual costs.

Support: Inclusion of previously deleted logistics items to support ground systems, support of additional satellite in FY90-93. Ground Station hardware, acquisition. Addition of Satellite Readout Station Upgrade (SRSU) project, Gramm Rudman Hollings and Congressional reductions. Revised prior year actual costs. Decrease to reflect PB funding, Zero Baseline Transfer FY90 funds for GSU, reestimate of initial spares costs, contingent liabilities in FY85, reduction of FY86 funds for logistic support for GSU, additional ground support in FY94. Negotiated value of Satellite Readout Station Upgrade (SRSU) lower than anticipated, FY93-94 delay of logistic support for SRSU, decreased technical support for ground systems, increase in FY85-86 funds for MGT-14 and Link 1/2 efforts. Adjustment for current year and prior year inflation offset.

13b. (U) Cost Variance Analysis (Cont'd):

Increase in initial spares requirement.
Logistic modifications to existing ground stations.
Reduced Aerospace MTS support.
Refinement of Peculiar Support Equipment estimate.

MILCON
Economic: Revised economic escalation indices.
Estimating: Adjustment for current and prior inflation.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-5.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.6	-0.9
Additional funding for continued ground system research and development program (Estimating)	+30.5	+74.1
Reduced ground software development (Estimating)	-10.7	-23.5
RDT&E Subtotal	+19.2	+44.4
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-124.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.6
Adjustment for Current & Prior Inflation. (Estimating)	+5.3	+12.2
Refinement of program estimate (Estimating)	-34.0	-87.7
Reduction of sensor engineering services and orbital support services (Estimating)	-1.5	-2.5
Additional requirement for continued on-orbit support funding (Estimating)	+62.1	+165.8
Decreased funding to support FEWS program (Estimating)	-62.1	-162.9
Additional requirement for software changes (Estimating)	+1.5	+6.0
Adjustment for Current & Prior Inflation. (Support)	+0.9	+1.9

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Additional requirement for initial spares (Support)	+10.3	+26.7
Additional requirement for peculiar support equipment (Support)	+2.3	+5.2
Additional requirement for other weapon systems support items (Support)	+0.6	+1.4
Procurement Subtotal	-14.6	-156.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
291.979	-8.900	23.885	6.264	--	29.412	--	29.632	80.293	372.272

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) SYSTEM 1:	Initial Contract Price Target	Ceiling	Qty
IBM, Boulder, CO F04701-87-C-0011, CPAF Award: May 1, 1987 Definitized: July 10, 1987	$80.8	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$101.9	N/A	0	$176.7	$178.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-18.5	$-2.0
Cumulative Variances To Date (08/14/92)	$-19.7	$-1.8
Net Change	$-1.2	$0.2

Explanation of Change:

This is the final time the System 1 contract will be reported in the SAR. The System 1 contract was terminated on 15 December 1992 for convenience of the government. The latest cost report received is dated 14 August 1992. Factors in the System 1 termination were that

15. (U) Contract Information (Cont'd):
the contractor's continued delivery delays significantly shortened the time in which System 1 would be operational before the fielding of FEWS and it was determined that an alternative of less risk and less cost could be developed to fill the interim until FEWS becomes operational.

(U) SAT READ-OUT STA UPGRADE:	Initial Contract Price Target	Ceiling	Qty
IBM, BOULDER, CO F04701-89-C-0072, FPI/CPF Award: July 14, 1989 Definitized: July 1, 1989	$28.1	$28.1	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$59.0	$65.1	0	$65.9	$65.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-27.2	$-0.8
Cumulative Variances To Date (02/14/93)	$-33.5	$-0.8
Net Change	$-6.3	$0.0

Explanation of Change:

The cost variance is attributed to the contractor's underestimation of program cost and technical risks. Contract requirements could not be met with commercial off the shelf equipment which resulted in costly development and testing by the contractor and their subcontractors. No impact to program.

(U) GROUND STATION OPERATION:	Initial Contract Price Target	Ceiling	Qty
IBM, Boulder, CO F04701-91-C-0088, CPAF Award: October 1, 1991 Definitized: October 1, 1991	$28.3	$28.3	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$50.8	$50.8	0	$49.4	$49.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$1.4	$-0.1
Cumulative Variances To Date (02/17/93)	$5.4	$-0.4
Net Change	$4.0	$-0.3

Explanation of Change:

15. (U) Contract Information (Cont'd):
The favorable cost variance is due to a system engineering requirement being less than planned. Also, maintenance was less than anticipated in the current time period due to low equipment failures and also due to the termination of the System 1 contract. The unfavorable schedule variance is not significant and has no impact to the program. The EPC increased because Option 1 of the contract was exercised which extended the contract one year.

b.(U) Procurement --

(U) MGT-14:
IBM, BOULDER, CO
F04701-81-C-0022, FPI/CPF
Award: October 1, 1985
Definitized: October 1, 1985

Initial Contract Price		
Target	Ceiling	Qty
$62.0	$66.9	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$236.3	$223.1	6	$250.6	$252.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$2.1	$0.0
Cumulative Variances To Date (02/17/93)	$1.9	$-0.4
Net Change	$-0.2	$-0.4

Explanation of Change:

This contract implemented an over target baseline in November 1991. Cost variance was adjusted $35.2M and schedule variance was adjusted $1.4M. Since the implementation, the contract is currently on schedule with a $1.8M cost underrun (0.8%). No impact to program.

(U) SATELLITES 18-22:
TRW SPACE & DEFENSE, REDONDO BEACH, CA
F04701-86-C-0022, FPI
Award: July 30, 1987
Definitized: July 30, 1987

Initial Contract Price		
Target	Ceiling	Qty
$743.5	$782.5	5

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$786.9	$825.8	5	$823.0	$823.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-20.9	$-2.5
Cumulative Variances To Date (03/05/93)	$-26.2	$-17.2
Net Change	$-5.3	$-14.7

15. (U) Contract Information (Cont'd):

Explanation of Change:

Unfavorable cost and schedule variance changes are due to LCS laser bias problems and other technical issues. Schedule delays and impacts to satellite delivery schedules were major contributors to significant growth of the estimate at complete. The Block 18 restructure effort is currently being negotiated in response to AFSPACECOM launch requirements. No impact to the program.

(U) SENSORS 18-22:	Initial Contract Price		
	Target	Ceiling	Qty
AEROJET, AZUSA, CA			
F04701-86-C-0023, FPIF/AF	$432.8	$454.9	5
Award: August 11, 1987			
Definitized: August 11, 1987			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$497.2	$521.9	5	$504.6	$504.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-9.2	$-5.7
Cumulative Variances To Date (02/28/93)	$-12.5	$-2.4
Net Change	$-3.3	$3.3

Explanation of Change:

This is the final time the Sensor 18-22 contract will be reported in the SAR. The contract is over 90% complete, significant effort is complete, and no modifications are expected that will reduce contract completion below 90%. The last deliverable item is scheduled for 4 June 1993. Cost and schedule variances are not significant. No impact to program.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 81.8% (27 yrs/33 yrs)

(2) Percent Program Cost Appropriated: 77.3% ($7195.3 / $9306.8)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY67-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1723.0	66.8	31.0	148.1	1968.9
Procurement	5444.8	498.6	437.6	929.4	7310.4
MILCON	27.5	-	-	-	27.5
O&M	-	-	-	-	-
Total	7195.3	565.4	468.6	1077.5	9306.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1967				57.1	30.8	30.8	30.8	3.1
1968				93.4	52.3	52.3	52.3	3.6
1969				162.4	95.3	95.3	95.3	4.2
1970				118.9	73.5	73.5	73.5	5.4
1971				130.7	84.4	84.4	84.4	5.3
1972				47.5	31.9	31.9	31.9	3.6
1973				46.7	32.3	32.3	32.3	3.6
1974				77.6	60.1	60.1	60.1	8.3
1975				40.7	34.4	34.4	34.4	10.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1976				18.2	16.4	16.4	16.4	7.0
197T								
1977				30.4	29.4	29.4	29.4	7.5
1978				28.0	28.7	28.7	28.7	6.0
1979				27.2	30.6	30.6	30.6	8.4
1980				24.8	31.0	31.0	31.0	9.4
1981				63.2	87.6	87.6	87.6	11.9
1982				97.4	144.2	144.2	144.2	9.2
1983				76.9	119.2	119.2	119.2	4.9
1984				29.6	47.7	47.7	47.7	3.8
1985				38.0	63.3	63.3	63.3	3.4
1986				37.4	63.8	63.8	63.8	2.8
1987				65.5	115.4	115.4	115.4	2.7
1988				48.6	89.4	89.4	89.4	3.0
1989				52.5	99.8	93.6	93.6	4.2
1990				45.4	89.7	88.9	83.0	4.0
1991				34.8	71.2	71.1	51.9	4.3
1992				24.5	51.5	49.4	32.2	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1993				22.9	49.1	27.6	0.4	2.4
1994				30.4	66.8			2.4
1995				13.8	31.0			2.3
1996				16.6	38.1			2.3
1997				15.3	35.9			2.2
1998				15.3	36.7			2.2
1999				15.2	37.4			2.2
Subtot	4			1646.9	1968.9	1692.3	1622.8	
Appropriation: 3020 Missile Procurement, Air Force								
1969				31.4	17.8	17.8	17.8	3.5
1970				62.3	37.0	37.0	37.0	4.7
1971	3		282.6	165.3	102.8	102.8	102.8	5.7
1972	2		188.4	157.5	105.2	105.2	105.2	3.7
1973	3		282.6	231.4	167.1	167.1	167.1	4.7
1974				38.1	28.1	28.1	28.1	8.4
1975	1		94.2	91.7	80.8	80.8	80.8	16.3
1976				42.1	39.5	39.5	39.5	7.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
197T								
1977				27.9	28.0	28.0	28.0	7.5
1978				88.9	94.1	94.1	94.1	6.0
1979				100.0	123.4	123.4	123.4	8.7
1980				73.9	103.9	103.9	103.9	9.7
1981				33.5	51.8	51.8	51.8	11.9
1982				146.2	241.4	241.4	241.4	9.6
1983	2		583.9	273.5	478.1	478.1	478.1	9.0
1984	2		583.9	239.5	436.6	436.6	436.6	8.0
1985				28.3	53.0	53.0	53.0	3.4
1986				56.8	111.4	111.4	111.4	2.8
1987				127.2	259.8	259.8	222.9	2.7
1988	1		130.8	166.5	353.4	353.4	353.4	3.0
1989	2		261.5	194.3	430.4	430.4	350.8	4.2
1990	1		130.8	152.4	343.5	343.5	235.6	4.0
1991	1		130.8	140.7	326.3	306.9	170.5	4.3
1992				27.5	64.4	38.6	14.5	2.8
1993				101.2	242.9	33.0	0.6	2.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
1994	1		264.0	186.9	459.1			2.4
1995				163.4	410.2			2.3
1996	1		264.0	163.1	418.7			2.3
1997	1		264.1	88.0	230.9			2.2
1998				32.3	86.7			2.2
1999				29.8	81.6			2.2
Subtot	21		3461.6	3461.6	6007.9	4065.6	3648.3	
Appropriation: 3080 Other Procurement, Air Force								
1969				31.3	17.6	17.6	17.6	3.5
1970				144.5	85.4	85.4	85.4	4.7
1971				56.5	35.0	35.0	35.0	5.7
1972				65.2	42.0	42.0	42.0	3.7
1973				27.6	19.0	19.0	19.0	4.7
1974				2.2	1.7	1.7	1.7	8.4
1975				6.4	5.6	5.6	5.6	16.3
1976				13.7	12.8	12.8	12.8	7.9
197T								

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
1977				13.6	13.6	13.6	13.6	7.5
1978				0.3	0.3	0.3	0.3	6.0
1979				6.0	7.6	7.6	7.6	8.7
1980				19.0	26.6	26.6	26.6	9.7
1981				46.8	70.3	70.3	70.3	11.9
1982				66.5	103.4	103.4	103.4	9.2
1983				55.8	90.1	90.1	90.1	4.9
1984				21.7	36.1	36.1	36.1	3.8
1985				29.9	51.4	51.4	42.4	3.4
1986				71.9	128.9	128.9	96.6	2.8
1987				48.3	89.8	89.8	85.0	2.7
1988				13.8	26.6	26.6	20.9	3.0
1989				0.9	1.8	1.8	1.8	4.2
1990				34.5	71.0	71.0	51.5	4.0
1991				35.2	74.2	69.5	41.3	4.3
1992				26.7	58.0	35.9	21.0	2.8
1993				24.9	55.3	23.6	10.3	2.4
1994				17.4	39.5			2.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
1995				11.8	27.4			2.3
1996				10.7	25.3			2.3
1997				10.3	24.9			2.2
1998				12.9	31.9			2.2
1999				11.6	29.4			2.2
Subtot				937.9	1302.5	1065.6	937.9	
Appropriation: 3300 Military Construction, Air Force								
1975				19.6	17.3	17.3	17.3	8.5
1976								
197T								
1977								
1978								
1979								
1980								
1981								
1982								
1983				1.1	1.9	1.9	1.9	4.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3300 Military Construction, Air Force (Cont'd)

1984								
1985				4.8	8.3	8.3	8.3	3.4
Subtot				25.5	27.5	27.5	27.5	
Grand Total	25		3461.6	6071.9	9306.8	6851.0	6236.5	

Obligation and Expenditure information reflects official accounting records as of 31 Mar 93.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Production is less than six or more in any two fiscal years. Therefore, production information is not required.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		498.6		N/A	N/A
Procurement Qty		1		N/A	N/A
Proc. Unit Cost	N/A	498.600	N/A	N/A	N/A
FY 1995					
Procurement Cost		437.6		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		929.4		N/A	N/A

Production is less than six or more in any two fiscal years. Therefore, production information is not required.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	4/4
Procurement	12/12

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

These Operations and Maintenance (O&M) funds implement PMD direction to support system sustaining engineering (orbital satellites, ground data systems, and operational system users), and to continue support of Ground Data Systems (GDS) sensors and survivability-enhanced Satellites 14-22. Support of operational orbital satellites includes anomaly detection and correction, analysis of on-orbit sensor performance, data compilation and analysis, analysis of special-interest, computer support functions, and launch support. These sustaining efforts reflect a relatively stable level-of-effort requirement through the Financial Plan years to support both advanced configuration of new operational satellites, and an aging orbital satellite configuration with increased anomaly resolution requirements, as well as an orderly transition of DSP Satellite

18a. (U) Operating and Support Costs (Cont'd):
Operations from Consolidated Space Test Center to Consolidated Space Operations Center.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per DSP System	Avg Annual Cost Per No Antecedent
Other Direct Costs	29.2	N/A
Total	29.2	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M (Air Force)	50.2	8.0	8.0	---	66.2
Industrial Fund	---	---	---	---	---
Total	50.2	8.0	8.0	---	66.2

N-13. EA-6B

95-117

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: EA-6B PROWLER

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
EA-6B/TACTICAL ELECTRONIC WARFARE (PROWLER)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

PROGRAM EXECUTIVE OFFICER	CAPT D. B. McKINNEY
TACTICAL AIRCRAFT PROGRAMS	Assigned: May 15, 1990
PMA234	AV 703-692-8083 EX-4825
ARLINGTON, VA 22243-1234	COMM 703-692-8083 EX-4825

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0204154N, 0604222N
PE 0604270N (Shared) ABN DEF ECM W0638
, 0205674N
PROCUREMENT:
APPN 1506 ICN 0115 (Navy)
APPN 1506 ICN 0116 (Navy)

No Security Objection
to Open Publication
(AS AMENDED)
93-C0483
MAY 25 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

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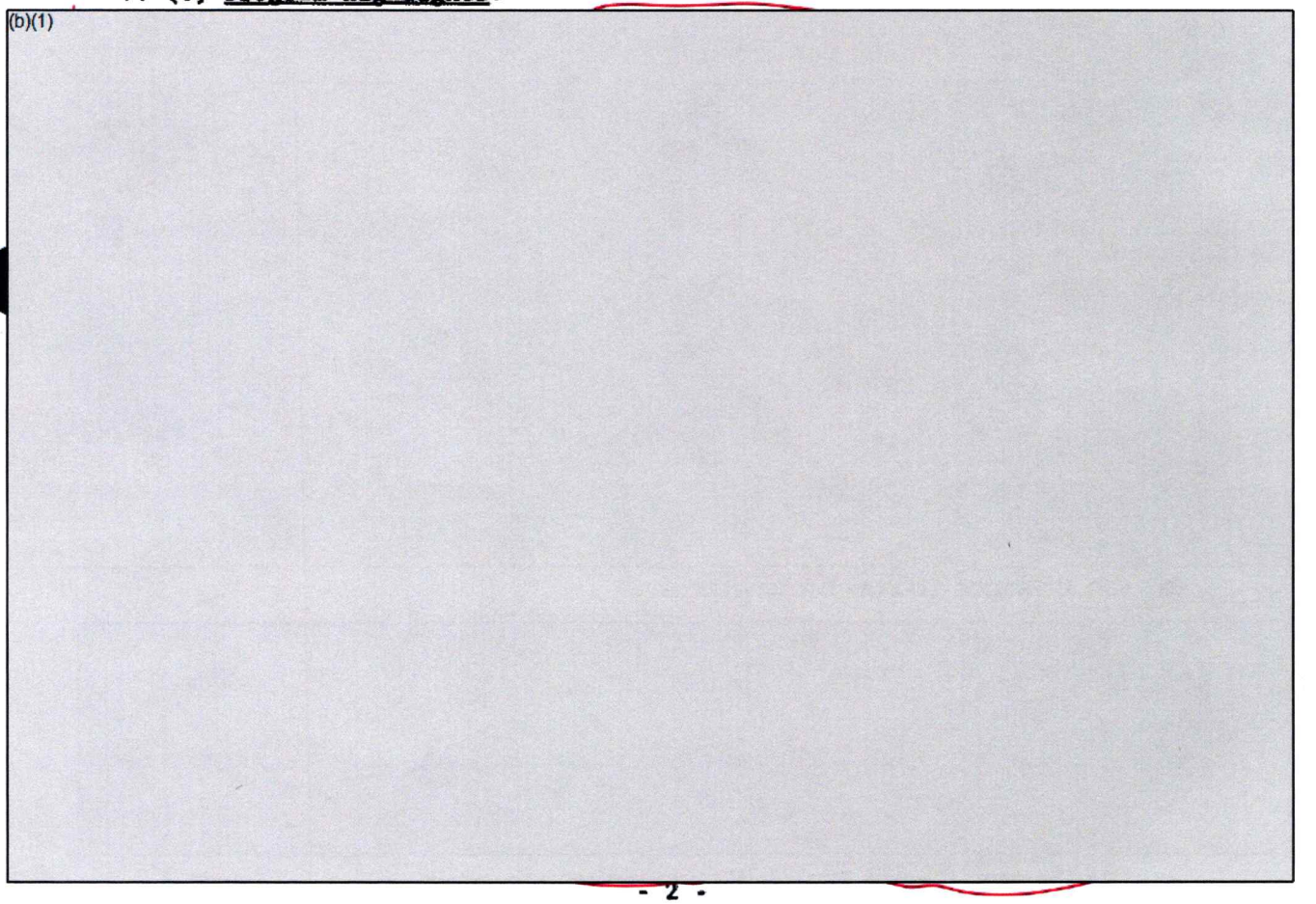
5. (U) Related Programs:
A-6E INTRUDER, E-2/C, F-14 TOMCAT AND F-111

6. (U) Mission and Description:

The primary mission of the EA-6B aircraft is suppression and degradation of enemy electronic defense systems by use of tactical jamming or high speed anti-radiation (HARM) missiles. Other missions include passive early warning for fleet defense and battlefield electronic surveillance. This aircraft is equipped with computer controlled electronics surveillance receivers and up to ten high power jamming transmitters in various frequency bands depending on the particular mission. The EA-6B is powered by two J52-P-408 engines. The aircraft is 59 feet in length and has a wing span of 53 feet.

7. (U) Program Highlights:

(b)(1)



7a. (b)(1)

(b)(1)

b. (U) Significant Developments Since Last Report --

The DODIG recommended a formal TECHEVAL and OPEVAL be accomplished on the Block 91 Configuration (rather than the RPG/ALQ-149 systems) prior to Milestone III. This necessitated a delay in the Avionics Improvement Program (AIP) Critical Design Review (CDR) so that configuration changes could be incorporated to ensure a production representative aircraft will be available for testing. The Milestone IIIA Low Rate Initial Production (LRIP) decision for ADVCAP (RPG/ALQ-149) was changed from March 1993 to July 1993. The Block 91 TECHEVAL (DT-II-H) was changed from May 1994 to November 1995. The Block 91 OPEVAL (OT-IIC) was changed from February 1995 to April 1996. The Milestone III decision for Block 91 was changed from January 1996 to December 1996. The Block 91 FOT&E was changed from April 1997 to September 1999. The ADVCAP(RPG/ALQ-149) successfully completed Operational Assessment on 23 October 1992 and was deemed to be potentially operationally suitable and effective. The EA-6B Approved Program Baseline (APB) was signed on 9 April 1993.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) <u>Threshold Breaches</u>:

There are no breaches to the Acquisition Program Baseline dated 9 April 1993 and no Nunn McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
Milestone III/Production Decision	N/A	NOV 70	NOV 70
EA-6B Navy Decision Coordinating Paper #20 Rev A	JUN 71	N/A	JUN 71
EA-6B Standard Version (Board of Inspection and Survey)	SEP 71	N/A	JAN 71
EA-6B Standard Version (Navy Preliminary Evaluation)	SEP 72	N/A	SEP 72
EXCAP EA-6B Operation Evaluation	MAY 74	N/A	MAY 74
EA-6B ICAP/ALQ-99 TJS (Navy Preliminary Evaluation)	NOV 75	N/A	NOV 75
EA-6B EXCAP (Operational Eval)	JUL 76	N/A	JUL 76
Service Acceptance Trials & Tech Eval of ICAP EA-6B Final Report	NOV 77	N/A	NOV 77
First EXCAP Delivery	N/A	NOV 77	NOV 77
First ICAP Delivery	N/A	NOV 77	NOV 77
EA-6B ICAP BIS	NOV 77	N/A	NOV 77
EA-6B ICAP Aircraft (Operational Eval)	MAR 79	N/A	MAR 79
Navy Preliminary Eval of ALQ-99 System in EA-6B ICAP-II	MAR 82	N/A	MAR 82
ICAP-II Initial Trials Phase & Navy Techeval of Service Acceptance Trials, Proj BIS 21323, Final Report	SEP 82	N/A	SEP 82
First ICAP II Delivery	N/A	SEP 82	SEP 82
OPEVAL of ICAP-II Aircraft	DEC 82	N/A	DEC 82
ADVCAP Full Scale Engineering Development (FSED)	MAR 83	MAR 83	MAR 83
Board of Inspection & Survey Report - ICAP-II	AUG 83	N/A	AUG 83
ADVCAP Contractor Tech Eval	FEB 85	N/A	FEB 90
ADVCAP First Flight	MAY 87	OCT 89	OCT 89
ADVCAP Navy Preliminary Eval	AUG 87	N/A	DEC 89
ADVCAP First Delivery	SEP 90	N/A	MAR 97
ADVCAP Technical/Operational Assessment (DT-IIF/OT-IIA)	N/A	NOV 91	NOV 91
ADVCAP Milestone IIIA (LRIP)	N/A	JUL 93	JUL 93(Ch-1)
ADVCAP TECHEVAL (DT-II-I)			
Start	N/A	NOV 95	NOV 95(Ch-2)
Complete	N/A	FEB 96	FEB 96
ADVCAP OPEVAL (OT-IIC)			
Start	N/A	APR 96	APR 96(Ch-3)
Complete	N/A	JUL 96	JUL 96

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
ADVCAP Milestone IIIB (AFP)	N/A	DEC 96	DEC 96(Ch-4)
ADVCAP FOT&E			
Start	N/A	SEP 99	SEP 99(Ch-5)
Complete	N/A	AUG 00	AUG 00

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

(b)(1)

[redacted]

b)(1)

9c. (b)(1) [redacted]

d. (U) References --

(U) Production Estimate:
EW Counter Response NDCP of 9 September 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 09 April 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1) [redacted]				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)	[redacted]			

b. (U) Previous Change Explanations --

The performance characteristics were updated to reflect the following: Band 2/3 transmitter (completing development in FY93) and Band 10 were added; and, the DF Accuracy for the Receiver Processor Group was changed to reflect increased accuracy. Maintenance man-hours per flight hours increased as a result of accelerated maintenance/inspections in anticipation of Desert Shield/Storm requirements. After the conclusion of Desert Storm, maintenance man-hours per flight hours returned to 51.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
EW Counter Response NDCP dated 9 Sep 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 09 April 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	210.6	414.7	416.1
Procurement	2029.0	7278.9	7387.1
Airframe	(639.9)		(1969.1)
Engine	(98.9)		(382.2)
Avionics	(490.9)		(3114.8)
Total Flyaway	(1229.7)		(5466.1)
Other Weapon Systems Cost	(678.6)		(1654.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(120.7)		(266.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	2239.6	7693.6	7803.2
Escalation	508.2	3880.2	3313.9
Development (RDT&E)	(30.9)	(89.2)	(83.2)
Procurement	(477.3)	(3791.0)	(3230.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2747.8	11573.8	11117.1

The EA-6B Approved Program Baseline (APB) was signed on 9 April 1993. The approved program development (RDT&E) and procurement costs in the APB reflect the FY94/FY95 President Bush budget (Total Then-Year of $11573.8M). The current estimate reflects the FY94 President Clinton budget showing a Total Then Year reduction of 4%.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	38	164	164
Total	38	164	164

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
EW Counter Response NDCP dated 9 Sep 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 09 April 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	11117.1	10204.6	11117.1
(2) Quantity	164	164	164
(3) Unit Cost	67.787	62.223	67.787
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	515.7	515.7	77.6
Less CY Adv Proc	46.9	46.9	0.0
Plus FY Adv Proc	17.0	17.0	0.0
Net Total	485.8	485.8	77.6
(2) Quantity	3	3	0
(3) Unit Cost	161.933	161.933	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	241.5	2506.3	0.0	2747.8
Previous Changes:				
Economic	+51.7	+431.6	-	+483.3
Quantity	-	+4069.0	-	+4069.0
Schedule	+148.9	+334.8	-	+483.7
Engineering	-	+0.4	-	+0.4
Estimating	-35.7	+987.1	-	+951.4
Other	-	-	-	-
Support	-	+1325.5	-	+1325.5
Subtotal	+164.9	+7148.4	-	+7313.3
Current Changes:				
Economic	-1.3	-401.2	-	-402.5
Quantity	-	-	-	-
Schedule	-	+214.4	-	+214.4
Engineering	-	-	-	-
Estimating	+94.2	+546.9	-	+641.1
Other	-	-	-	-
Support	-	+603.0	-	+603.0
Subtotal	+92.9	+963.1	-	+1056.0
Total Changes	+257.8	+8111.5	-	+8369.3
Current Estimate	499.3	10617.8	-	11117.1

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	210.6	2029.0	0.0	2239.6
Previous Changes:				
Quantity	-	+2933.8	-	+2933.8
Schedule	+124.5	+123.5	-	+248.0
Engineering	-	+0.4	-	+0.4
Estimating	+13.8	+823.8	-	+837.6
Other	-	-	-	-
Support	-	+798.7	-	+798.7
Subtotal	+138.3	+4680.2	-	+4818.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+31.7	-	+31.7
Engineering	-	-	-	-
Estimating	+67.2	+323.2	-	+390.4
Other	-	-	-	-
Support	-	+323.0	-	+323.0
Subtotal	+67.2	+677.9	-	+745.1
Total Changes	+205.5	+5358.1	-	+5563.6
Current Estimate	416.1	7387.1	-	7803.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Increase due to introduction of ALQ-149/RPG into ADVCAP aircraft, integration of HARM into ICAP II and ADVCAP aircraft, and development of jammer modulation.

Estimating: Recategorization of Consolidated Electronic Warfare Funding and Below Threshold Reprogrammings. Revised program estimates.

Procurement

Economic: Revised escalation indices.

Quantity: Increase of Sixty Nine (69) Aircraft to reflect

13b. (U) Cost Variance Analysis (Cont'd):

cost-to-complete program.
Costs associated with reduction of aircraft from 167 to 164.

Schedule: Total of budgeted aircraft increased by 12 and added two fiscal years.
Costs associated with reduction of aircraft from 167 to 164.

Engineering: Revised estimates.

Estimating: Revised Program Estimates.
Revised contractor business base, estimates for CFE/GFE and revised NRE estimates.
Costs associated with reduction of aircraft from 167 to 164.
Revised Grumman business base due to the cancellation of the F-14 program.
Incorporated additional Grumman contractor data and pricing for production engines vice engine kit upgrades.

Support: Increased support for four additional Fiscal Years (69 Aircraft). Revised support estimates for remanufacture.
Revised Grumman business base due to the cancellation of the F-14 program.
Complied with directed OSD/OMD reductions.
Revised initial spares estimates.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+0.5
Revised Program Estimates due to additional funding for the development program. (Estimating)	+8.7	+13.7
Reprogramming From APN (see procurement below) (Estimating)	+58.1	+80.0
RDT&E Subtotal	+67.2	+92.9
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-401.2

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Delay start of remanufacture program one year and resulting extension of two additional years. (Schedule)	+31.7	+214.4
Economic Adjustment for Negative Variances (Estimating)	N/A	N/A
Adjustments for current and prior inflation (Estimating)	+10.6	+13.5
Costs associated with one year delay and extension of remanufacture program. (Estimating)	+369.1	+613.4
Reprogramming to RDT&E (see RDT&E above) (Estimating)	-56.5	-80.0
Adjustment for current and prior inflation (Support)	+8.0	+10.2
Support and initial spares costs associated with one year delay and two year extension of remanufacture program. (Support)	+315.0	+592.8
Procurement Subtotal	+677.9	+963.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
72.31	0.49	-30.75	4.26	--	9.71	--	11.76	-4.53	67.79

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) RECEIVER PROCESSOR GROUP:	Target	Initial Contract Price Ceiling	Qty
GRUMMAN AEROSPACE, BETHPAGE, LI,, NY N00019-83-C-0148, FFP Award: February 1, 1984 Definitized: July 1, 1986	$255.0	N/A	6

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$255.0	N/A	6	$255.0	$280.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The difference in the EPAC ($255M/$280M) reflects DPRO Grumman's estimate of the contractor's loss situation.

b.(U) Procurement --

(U) AVIONICS IMPRV PROGRAM:
GRUMMAN AEROSPACE, BETHPAGE, NY
N00019-89-C-0121, FFP
Award: July 1, 1990
Definitized: July 31, 1990

Initial Contract Price		
Target	Ceiling	Qty
$248.1	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$255.8	N/A	1	$331.4	$331.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Integration and installation of AN/AYK14 XN-8 computers, optimized Heads Up Display and certain aircraft structural components.

(U) VEHICLE ENHANCEMENT:
GRUMMAN AEROSPACE, BETHPAGE, NY
N00019-88-C-0227, FFP
Award: May 26, 1989
Definitized: May 26, 1989

Initial Contract Price		
Target	Ceiling	Qty
$34.7	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$78.3	N/A	1	$78.3	$78.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

Static test of the EA-6B Vehicle Enhancement Program was definitized resulting in a lower target Current Contract Price and Estimated Price At Completion.

(U) RPG NRE:	Initial Contract Price		
	Target	Ceiling	Qty
GRUMMAN AEROSPACE, BETHPAGE, NY N00019-90-C-0105, FFP Award: November 15, 1990 Definitized: November 15, 1990	$57.6	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$57.6	N/A	1	$57.6	$57.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 50.0% (11 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 38.3% ($4258.9 / $11117.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2004)	Total
RDT&E	411.7	46.0	16.3	25.3	499.3
Procurement	3847.2	77.6	443.1	6249.9	10617.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4258.9	123.6	459.4	6275.2	11117.1

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1984				24.8	25.3	25.3	25.3	3.8
1985				34.1	35.8	35.8	35.8	3.4
1986				74.9	81.0	81.0	74.7	2.8
1987				54.2	60.3	60.3	53.6	2.7
1988				53.7	61.8	61.8	58.9	3.0
1989				14.4	17.2	17.2	15.3	4.2
1990				19.0	23.7	23.7	22.5	4.0
1991				9.4	12.1	12.1	10.7	4.3
1992				17.9	23.7	23.1	16.4	2.8
1993				52.2	70.8	21.6	1.1	2.4
1994				33.1	46.0			2.4
1995				11.5	16.3			2.3
1996				5.0	7.3			2.3
1997				4.1	6.1			2.2
1998				4.0	6.0			2.2
1999				3.8	5.9			2.2
Subtot				416.1	499.3	361.9	314.3	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1506 Aircraft Procurement, Navy								
1983				16.8	17.0	17.0	17.0	9.0
1984	8	2.5	222.2	453.1	475.6	475.6	475.6	8.0
1985	6	9.9	183.3	334.9	361.7	361.7	355.0	3.4
1986	12	26.8	276.9	375.8	418.3	418.3	407.1	2.8
1987	12	3.8	287.7	390.3	449.7	449.6	433.9	2.7
1988	12	5.2	284.1	377.8	454.1	451.8	432.0	3.0
1989	12	138.6	247.9	438.4	548.1	547.5	478.3	4.2
1990		48.9		106.5	137.8	134.4	68.8	4.0
1991		219.7		264.9	352.4	253.6	117.9	4.3
1992		11.9		85.7	116.8	75.9	38.7	2.8
1993	3	119.2	177.1	369.8	515.7	12.9	0.2	2.4
1994		1.6		54.4	77.6			2.4
1995	6		234.8	303.8	443.1			2.3
1996	6		214.4	299.7	446.8			2.3
1997	6	2.0	270.5	334.9	510.2			2.2
1998	12		356.9	411.5	640.7			2.2
1999	12	1.2	350.8	394.4	627.6			2.2
2000	12	6.4	368.4	508.8	827.5			2.2

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		77.6		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		443.1		N/A	N/A
Procurement Qty		6		N/A	N/A
Proc. Unit Cost	N/A	73.850	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		6249.9		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	62/62

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

DEC 1990 ESTIMATES

PERSONNEL - The makeup, in terms of grades and ratings/designators, of a 5 aircraft squadron is the same proportionally, to the manning of a 4 aircraft squadron. Four aircraft per squadron. Retirement account is 43.9% of the base pay. Four aircraft squadron manning, derived from the five aircraft Squadron Manpower Document (SQMD)/OP-123;28 officers and 186 enlisted, does not represent actual manning in the fleet. Actual manning levels compared to the SQMD are 92.9% for the officers and 81.2% for the enlisted. One Sea Operations Detachment (SEA-OP-DET) supports one EA-6B squadron. For costing purposes a Designated Striker is assumed to be an E-3 airman. For costing purposes a W-3's billet cost is assumed to be 1.05 times a E-9's cost.

PETROLEUM, OIL AND LUBRICANTS (POL) - None

18a. (U) Operating and Support Costs (Cont'd):

TRAINING EXPENDABLES - None

MAINTENANCE CONSUMABLES - None

AIRFRAME REWORK - A Standard Depot Level Maintenance (SDLM) would take place at an average of the cycle times as shown in the Weapons Systems Planning Document (WSPD). WSPD SDLM cycle times would be further adjusted to the Aircraft Service Period Adjustment (ASPA) program. The adjustments would reflect 70% of all aircraft having induction delayed one year, and then 30% of the 70% would be delayed for a second year. This would result in a projeced interval of 48.9 months [(.3*.7)(avg cycle + 24 months +(.7-(.3*.7))(average cycle + 12 months + (.3)(avg cycle)].

ENGINE REPAIR AND REWORK - None

COMPONENT REPAIR AND REWORK - The ratio of replenishment spares to the total component rework and replenishment spares, in Visibility and Management of Support Costs - Maintenance Subsystems (VAMOSC MS), is the same ratio as replenishment spares to Aviation Depot Level Repairables (AVDLR) in the OP-20 data.

REPLENISHMENT SPARES - The ratio of replenishment spares to the total component rework and replenishment spares, in VAMOSC MS, is the same ratio as replenishment spares to AVDLR's in the OP-20 data.

SUPPORT EQUIPMENT REPLENISHMENT - None

SOFTWARE MAINTENANCE - None

INDIRECT PERSONNEL SUPPORT - None

EA-6B (Antecedent) data not available at this time.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per EA-6B SQUADRON	Avg Annual Cost Per N/A
Personnel	9.6	N/A
O&S Consumables	5.5	N/A
Direct Depot Maintenance	7.8	N/A
Substaining Investment	1.7	N/A
Other Direct Cost	0.0	N/A
Indirect Cost	0.4	N/A
Total	25.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	10.4	2.3	---	---	12.7
NIF/DBOF	11.0	2.2	---	---	13.2
Depot Maintenance	79.7	---	---	---	79.7
Other	9.8	2.2	---	---	12.0
Total	110.9	6.7	---	---	117.6

A-4 ATACMS

92-033

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: Army TACMS

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION
AS AMENDED
MAY 28 1993 5

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Army Tactical Missile System (Army TACMS)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

HQDA
ATTN: SFAE-MSL-AT
RedstoneArsenal, AL 35898-5650

COL David F. Matthews
Assigned: April 13, 1990
AV 746-1141 COMM (205) 876-1141

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 64324 Project D302
PROCUREMENT:
APPN 2032 ICN C98500 (Army)
APPN 2032 ICN CA0261 (Army)
MILCON:
PE 024030

[redacted]

[redacted] OASD(PA) DFOISR 93-C-732

5. (U) Related Programs:
Army TACMS Smart Submunition Warhead (Block II); Multiple Launch Rocket System (MLRS)

6. (U) Mission and Description:
The Army Tactical Missile System (Army TACMS) is a ground-launched missile system consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. Army TACMS missiles are fired from the Multiple Launch Rocket System (MLRS) modified M270 launcher and are being deployed within the ammunition loads of corps MLRS battalions and/or division artillery MLRS batteries. Army TACMS includes:

GUIDED MISSILE AND LAUNCHING ASSEMBLY: M39
TEST SET, GUIDED MISSILE SYSTEM: AN/TSM-193
TRAINING SET, GUIDED MISSILE SYSTEM: M165
TRAINER, TEST DEVICE,GUIDED MISSILE: M70
Modified M270 Launcher
Army TACMS Missile Facilities

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In 1981, the Army established a Special Task Force to initiate development of requirements for a Corps Support Weapon System (CSWS) to engage high priority targets at ranges beyond those of existing weapons. In Jun 82, DoD directed the merger of similar Army/Air Force programs into a joint development designated the Joint Tactical Missile System (JTACMS). In 1983, a TRADOC study resulted in an Army decision to utilize the MLRS launcher to fire the JTACMS. In 1984, a joint service decision was made to abandon efforts to develop a common missile, and DoD approved the Army's request to develop an Army peculiar weapon. During FY 85, the name was changed to Army TACMS and the Required Operational Capability (ROC) was approved in May 85. In Jun 85, the Assistant Secretary of the Army for Research, Development and Acquisition (ASA(RDA)) approved release of the request for proposal (RFP) for full-scale development (FSD). The Army Systems Acquisition Review Council (ASARC) approval of the program was received in Dec 85. The Defense Systems Acquisition Review Council (DSARC) approval was received in Feb 86. To initiate FSD, a competitive contract was awarded for the M39s and a sole source contract was awarded for integration in Mar 86. In Jan 89, ASARC IIIA authorized award of a low-rate initial production (LRIP) option which was accomplished 1 Feb 89. Engineering Design Test-Contractor (EDT-C) flights were completed in Feb 89. Development Test (DT) flights were completed in Dec 89. In Dec 89, a "Rump" ASARC IIIB was conducted which granted approval for a second year of LRIP. Army TACMS reported a Nunn-McCurdy Breach on 31 Mar 90. The Initial Operational Test and Evaluation Program (IOTE) was successfuly completed in Jun 90. Army TACMS LRIP-I and LRIP-II were accelerated during Sep 90 requiring early delivery of 20 missiles in support of

7a. (U) Program Highlights (Cont'd):

Operation Desert Shield. On 2 Nov 90, Army TACMS was granted approval to proceed to Milestone IIIB, full-rate production (FRP), by the Defense Acquisition Board (DAB). On 15 Nov 90, the Army TACMS Missile Facility at Weilerbach Ammunition Storage Area, Germany, was certified as the organic depot for Army TACMS. The first electronic safe and arm fuze (ESAF)/off-the-side missile flight was successfully conducted at White Sands Missile Range (WSMR) on 11 Jan 91. LRIP-II was accelerated a second time in Jan 91 in support of Operation Desert Storm. FRP-I was accelerated on 13 Mar 91 to fill a production gap between LRIP-II and FRP-I and to prevent further delay in fielding to Europe and Korea. A letter contract for 55 additional FRP missiles was signed 1 May 91. Delivery was in Aug-Sep 92 which prevented a production gap between FRP-I and FRP-II. The Commander-In-Chief, U.S. Army Europe (USAREUR), approved the conditional release of Army TACMS to USAREUR. The first FRP missile was delivered 31 May 91. All ESAF missile flight tests were successfully completed as of 6 Jun 91. A total of 18 missiles was successfully handed off to USAREUR as of 25 Jul 91; this completed initial fielding to USAREUR. The Army TACMS Test and Evaluation Master Plan (TEMP) was approved by the Deputy Under Secretary of the Army for Operations (USA(OR)) on 5 Aug 91. In support of lightweight launcher concept development efforts, an Army TACMs firing was conducted 4 Sep 91 using a test bed vehicle. The firing resulted in an in-flight failure due to failure of the rocket motor throat insert. Failure analysis indicated the throat failure was due to the use of material with insufficient mechanical strength. All future motors will utilize throat insert material which has demonstrated adequate mechanical strength. A retrofit program was planned for those assets containing the suspect throat inserts. A total of 22 missiles was successfully handed off to the 8th U.S. Army-Korea (EUSA) as of 18 Sep 91, completing initial fielding to EUSA. All four of the "Explicit Guidance" missile flight tests were successfully conducted at WSMR. The first follow-on production test (FPT) program flight test was conducted 11 Dec 91 at WSMR and resulted in an in-flight failure. The flight hardware was recovered and failure analysis was conducted. Army TACMS reported a performance breach to the Approved Program Baseline (APB) in the Dec 91 SAR. On 16 Jan 92, the Army TACMS Project Manager was named the Army's Project Manager of the year at the PEO/PM Conference in Orlando, FL.

b. (U) Significant Developments Since Last Report --
Five FTP flights (Nos. 2-6) were successfully conducted at WSMR, NM. The Multiple Launch Rocket System/Army TACMS M270 Launcher Version 6.05 software was successfully demonstrated during FPT Flight No. 5. FRP I deliveries were completed in Sep 92. The Army TACMS Deputy Project Manager was awarded the decoration for Exceptional Civilian

7b. (U) Program Highlights (Cont'd):

Service by the Secretary of the Army on 19 Nov 92.

Army TACMS is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --
As a result of an ASARC on 9 Feb 93 and a Strategic Systems Committee (SSC)/Conventional Systems Committee (CSC) meeting on 12 Feb 93, the Block I production buy was split and stretched. Approval was granted for the Pre-Planned Product Improvement (P3I) APAM and P3I Brilliant Anti-Armor Submunition (BAT) (P3I) programs. This resulted in funds being placed within existing RDTE and procurement budget lines. These funds are not included in this report. The RDTE funds will also be used to support participation with prototype missiles in the Joint Air, Land and Sea Precision Strike Demonstration. On 19 Mar 92, the second Stockpile Reliability Program flight test (SRP-2) was successfully conducted at WSMR. The missile launch command was passed from Fort Belvoir, VA, through three levels of command and control links to the launcher as part of a complex detect and fire scenario. In keeping with the tactical scenario, soldiers from Fort Bragg, NC, and Fort Sill, OK, participated at all levels.

8. (U) Threshold Breaches:
There is currently a procurement cost breach to the Acquisition Program Baseline (APB), dated 15 Sep 92. A Program Deviation Report has been forwarded. A baseline change will be prepared to support a Dec 93 Milestone IV Decision with the User Requirements (AAO) to be determined in Oct 93. There are currently no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
Assault Breaker Tech Demonstration			
Start	APR 78	APR 78	APR 78
Complete	DEC 82	DEC 82	DEC 82
Special Task Force Initiated	MAR 81	N/A	MAR 81
Mission Element Need Statement Approval	APR 81	N/A	APR 81
Joint (Army/AF) Program Directed	JUN 82	JUN 82	JUN 82
ROC Approved	MAY 85	MAY 85	MAY 85
Request For Proposal (RFP) Released	JUN 85	N/A	JUN 85
Milestone II (ASARC)	DEC 85	N/A	DEC 85
Milestone II (DSARC)	FEB 86	FEB 86	FEB 86

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
FSD Contract Award	MAR 86	MAR 86	MAR 86
Long Lead Time Items Contract Option Award	MAY 88	MAY 88	MAY 88
EDT-C			
Start	MAR 86	MAR 86	MAR 86
Complete	FEB 89	FEB 89	FEB 89
DA Program Review (ASARC IIIA)	FEB 89	FEB 89	FEB 89
LRIP Contract Option Award	FEB 89	FEB 89	FEB 89
DT II Flight Test			
Start	MAR 89	MAR 89	MAR 89
Complete	DEC 89	DEC 89	DEC 89
OT Readiness Review	MAR 90	MAR 90	MAR 90
First LRIP Delivery	MAR 90	MAR 90	MAR 90
IOTE Flight/Ground Test			
Start	MAR 90	MAR 90	MAR 90
Complete	JUN 90	JUN 90	JUN 90
Confirmatory Test Complete (if required)	JUL 90	JUL 90	JUN 90
First Unit Equipped	AUG 90	AUG 90	AUG 90
Milestone III (DAB)	OCT 90	OCT 90	NOV 90
Initial Operational Capability (IOC)	OCT 90	OCT 90	AUG 90
Prod Verification Test (if required)			
Start	NOV 90	NOV 90	NOV 90
Complete	MAY 91	JAN 91	JAN 91
Full-Rate Production Contract Award	NOV 90	NOV 90	NOV 90
First Full Rate Production Delivery	OCT 91	OCT 91	MAY 91
Full-Rate Production-II Contract Award	N/A	DEC 91	DEC 91
First Full-Rate Production-II Delivery	N/A	OCT 92	OCT 92

b. (U) Previous Change Explanations --

First full rate production delivery current estimate changed to reflect actual completion date. Multiyear production contract award and first multiyear production delivery current estimate changed because the Army Acquisition Executive did not approve the Multiyear Procurement Program due to inadequate cost savings when compared to annual contracts. Full-rate production-II contract award and first full-rate production-II delivery added as the Multiyear Program was not approved.

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
DCP, dated 15 Sep 90, subject: "Army Tactical Missile System Block I," based on Milestone III (DAB) decision.

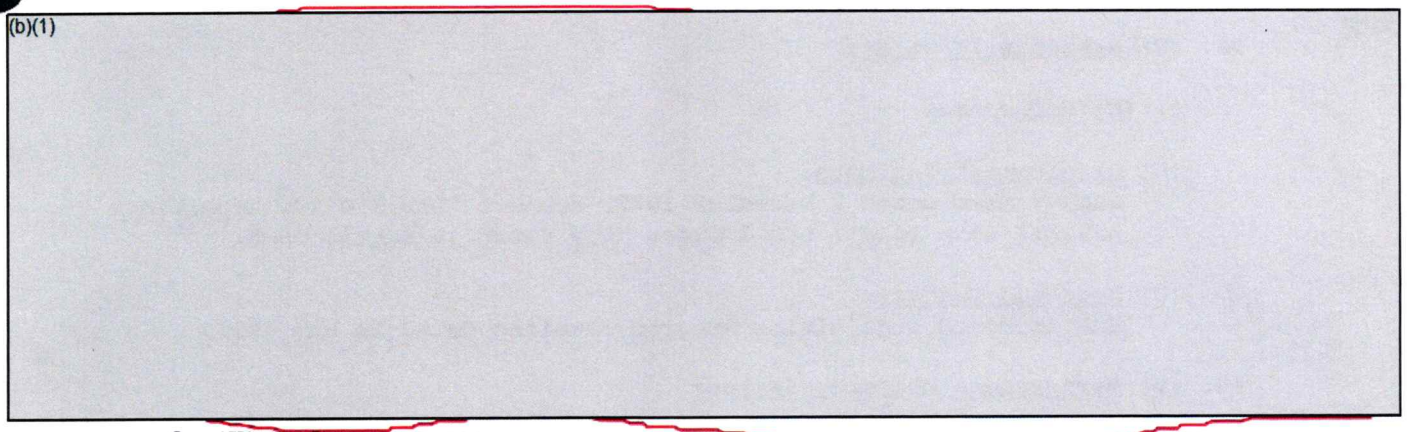
(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 15 September 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

(b)(1)



d. (U) References --

(U) Production Estimate:
DCP, dated 15 Sep 90, subject: "Army Tactical Missile System Block I," based on Milestone III (DAB) decision.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 15 September 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	650.6	647.6	649.8
Procurement	846.4	888.1	1003.3
Flyaway	(821.2)		(973.2)
Other Weapon Systems	(22.9)		(27.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(2.3)		(2.3)
Construction (MILCON)	9.6	9.7	10.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	1506.6	154▼4	1663.1
Escalation	1.6	-5.5	-9.7
Development (RDT&E)	(-89.3)	(-86.4)	(-88.6)
Procurement	(90.0)	(80.1)	(78.4)
Construction (MILCON)	(0.9)	(0.8)	(0.5)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1508.2	1539.9	1653.4

11b. (U) Total Program Cost and Quantity (Cont'd):

b. (U) Quantity --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	15	0	15
Procurement	1542	1573	1647
Total	1557	1573	1662

Note: Excludes 35 RDTE prototypes from the SAR Baseline and 35 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
DCP, dated 15 Sep 90, subject: "Army Tactical Missile System (Block I)," based on Milestone III (DAB) decision.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 15 September 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1653.4	1539.9	1653.4
(2) Quantity	1662	1588	1662
(3) Unit Cost	0.995	0.970	0.995
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	190.6	190.6	152.6
Less CY Adv Proc	24.9	24.9	0.0
Plus PY Adv Proc	21.6	21.6	24.9
Net Total	187.3	187.3	177.5
(2) Quantity	351	351	255
(3) Unit Cost	0.534	0.534	0.696

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	561.3	936.4	10.5	1508.2
Previous Changes:				
Economic	+2.8	-12.3	-0.1	-9.6
Quantity	-	+15.3	-	+15.3
Schedule	-	-4.3	-	-4.3
Engineering	-	-	-	-
Estimating	-2.9	+31.6	+0.1	+28.8
Other	-	-	-	-
Support	-	+1.5	-	+1.5
Subtotal	-0.1	+31.8	-	+31.7
Current Changes:				
Economic	-2.1	-19.6	-0.3	-22.0
Quantity	-	+36.4	-	+36.4
Schedule	-	+0.9	-	+0.9
Engineering	-	-	-	-
Estimating	+2.1	+92.0	+0.3	+94.4
Other	-	-	-	-
Support	-	+3.8	-	+3.8
Subtotal	-	+113.5	-	+113.5
Total Changes	-0.1	+145.3	-	+145.2
Current Estimate	561.2	1081.7	10.5	1653.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	650.6	846.4	9.6	1506.6
Previous Changes:				
Quantity	-	+13.1	-	+13.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.0	+27.4	+0.1	+24.5
Other	-	-	-	-
Support	-	+1.2	-	+1.2
Subtotal	-3.0	+41.7	+0.1	+38.8
Current Changes:				
Quantity	-	+31.1	-	+31.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.2	+80.4	+0.3	+82.9
Other	-	-	-	-
Support	-	+3.7	-	+3.7
Subtotal	+2.2	+115.2	+0.3	+117.7
Total Changes	-0.8	+156.9	+0.4	+156.5
Current Estimate	649.8	1003.3	10.0	1663.1

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Estimating: Prior and current year inflation offset.

Procurement
Economic: Revised escalation indices.
Quantity: Increase of 31 missiles to the procurement schedule.
Schedule: Effect of increasing 1991 buy and the decrease of buys in 1993 and 1994.
Estimating: Current and prior year inflation offset. Program estimate revisions mandated by reduced funding.

13b. (U) Cost Variance Analysis (Cont'd):

Support: Revised estimate of fielding costs.

MILCON

Economic: Revised escalation indices.

Estimating: Prior and current year inflation indices.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	N/A	-2.1
Adjustment for current and prior year inflation offset (Estimating)	+2.2	+2.1
RDT&E Subtotal	+2.2	--
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-19.6
Total Variance associated with increase of 74 units.	+32.0	+37.4
Quantity Variance resulting from increase of 74 units. (Quantity)	+31.1	+36.4
Estimating Variance associated with quantity increase. (Estimating)	+0.9	+1.0
Change in procurement buy schedule. (Schedule)	--	+0.9
Adjustment for Current & Prior Inflation. (Estimating)	+11.2	+12.0
Program cost revision mandated by increased funding (Estimating)	+68.3	+79.0
Adjustment for Current & Prior Inflation. (Support)	+0.3	+0.3
Revised estimate for support equipment. (Support)	+8.6	+9.4
Revised estimate for fielding costs. (Support)	-5.2	-5.9
Procurement Subtotal	+115.2	+113.5
(3) MILCON		
Revised economic escalation indices (Economic)	N/A	-0.3

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for current and prior year inflation offset (Estimating)	+0.3	+0.3
MILCON Subtotal	+0.3	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.159	-0.049	-0.096	0.026	0.143	-1.234	--	0.020	-1.190	0.969

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.969	-0.019	-0.030	-0.002	--	0.074	--	0.003	0.026	0.995

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) FSD LCH & GSE INTEG:

LORAL Vought Sys Corp*, Dallas, TX
DAAH01-86-C-A037, FPI
Award: March 27, 1986
Definitized: March 27, 1986

Initial Contract Price		
Target	Ceiling	Qty
$83.0	$94.4	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$102.3	$115.6	0	$115.6	$115.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-20.8	$-0.9
Cumulative Variances To Date (12/31/92)	$-21.5	$0.0
Net Change	$-0.7	$0.9

15. (U) Contract Information (Cont'd):

Explanation of Change:

The ceiling price decreased by .7M as a result of a contract "reopener" clause.

* Formerly LTV Aerospace & Defense Co.

Explanation of Change: This is the last time this contract will appear in the SAR; contract closed at ceiling in Dec 92. The majority of the schedule and cost growth is in the software areas of the Fire Control System (FCS) and Fire Direction Data Manager (FDDM).

b.(U) Procurement --

(U) FRP I:	Initial Contract Price		
	Target	Ceiling	Qty
LORAL Vought Systems Inc., Dallas, TX DAAH01-86-C-A036, FFP Award: November 5, 1990 Definitized: April 30, 1992	$132.3	N/A	318

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$145.4	N/A	373	$145.4	$145.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The target price decreased $27M. The change was due to long leadtime items ($13M) being transferred to Contract DAAH01-92-C-0038, definitization of accelerations ($3.2M), and definitization of the additional buy of 55 M39s ($10.8M). The accelerations and additional buy were to prevent a production gap between FRP I and II, and to replenish assets expended during Operation Desert Storm.

This is the last time this contract will appear in the SAR, the contract closed in Sep 92.

(U) FRP II:	Initial Contract Price		
	Target	Ceiling	Qty
LORAL Vought Sys Corp, Dallas, TX DAAH01-92-C-0038, FFP Award: December 6, 1991 Definitized: December 6, 1991	$114.0	N/A	300

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$127.5	N/A	300	$127.5	$127.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Target price has increased due to long leadtime items from contract DAAH01-86-C-A036 ($13M) and incorporation of engineering change proposals (ECPs) (.5M).

Contract data as of 31 Mar 93.

(U) FRP III:

	Initial Contract Price		
	Target	Ceiling	Qty
LORAL Vought Sys Corp, Dallas, TX DAAH01-92-C-0038, FFP Award: November 25, 1992 Definitized: November 25, 1992	$143.8	N/A	351

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$143.8	N/A	351	$143.8	$143.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Contract data as of 31 Mar 93.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 82.4% (14 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 81.3% ($1344.8 / $1653.4)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY80-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96)	Total
RDT&E	561.2	-	-	-	561.2
Procurement	773.1	152.6	116.0	40.0	1081.7
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	1344.8	152.6	116.0	40.0	1653.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1980				14.8	9.4	9.4	9.4	10.6
1981				20.0	14.0	14.0	14.0	10.6
1982				15.9	11.8	11.8	11.8	7.6
1983				7.7	6.0	6.0	6.0	4.9
1984				62.4	50.2	50.2	50.2	3.8
1985				92.1	76.4	76.4	76.4	3.4
1986				124.7	106.6	106.6	106.6	2.8
1987				87.2	76.5	76.5	76.5	2.7
1988				110.0	100.1	100.1	100.1	3.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1989				78.0	73.8	73.8	71.1	4.2
1990				37.0	36.4	36.4	33.2	4.0
Subtot	15			649.8	561.2	561.2	555.3	
Appropriation: 2032 Missile Procurement, Army								
1988				3.7	3.5	3.5	3.5	3.0
1989	66		62.8	73.4	72.5	72.5	72.5	4.2
1990	104		95.1	101.1	103.2	103.1	102.4	4.0
1991	373		220.2	220.2	230.9	229.6	210.1	4.3
1992	300		154.0	160.5	172.4	169.7	79.1	2.8
1993	351		170.7	173.4	190.6	141.9	2.9	2.4
1994	255		135.7	135.9	152.6			2.4
1995	148		100.8	101.0	116.0			2.3
1996	50		33.9	34.1	40.0			2.3
Subtot	1647		973.2	1003.3	1081.7	720.3	470.5	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2050 Military Construction, Army								
1991				4.8	5.0	5.0	4.5	4.3
1992				5.2	5.5	5.5	5.0	2.8
Subtot				10.0	10.5	10.5	9.5	
Grand Total	1662		973.2	1663.1	1653.4	1292.0	1035.3	

Expenditures and obligations reflect Program Office Records as of 31 Mar 93.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady-state, full-rate production baseline of 351 per year was approved by the Acquisition Decision Memorandum (ADM) dated 2 Nov 90.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	156.5	152.6	214.2	+3.9	+61.6
Procurement Qty	240	255	453	-15	+198
Proc. Unit Cost	0.652	0.598	0.473	+0.054	-0.125
FY 1995					
Procurement Cost	154.1	116.0	0.0	+38.1	-116.0
Procurement Qty	213	148	0	+65	-148
Proc. Unit Cost	0.723	0.784	N/A	-0.061	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	40.0	0.0	-40.0	-40.0

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	50/50
Procurement	693/696

There are 15 fully configured RDT&E units.

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 1647 - @ Peak Rate: 38.0/mo			
FY 91 Base-Year $	0.462	0.591	0.621
Then Year $	0.539	0.638	0.670
@ Qty 170 (1st three years) - @ Peak Rate: 38.0/mo			
FY 91 Base-Year $	0.587	0.929	0.975
Then Year $	0.673	1.001	1.051

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Army TACMS is fired from the modified MLRS M270 launcher within the MLRS organizational units. Army TACMS Operating and Support (O&S) costs are included in the O&S section of the MLRS SAR and are from the Jul 91 Army TACMS Baseline Cost Estimate. Manning/crew support

18a. (U) Operating and Support Costs (Cont'd):
will be provided by MLRS organizational unit. Army TACMS is a certified round. Maintenance determined on the basis of periodic surveillance tests taken from Jun 92 Baseline Cost Estimate.

b. (U) Costs -- None.

Sustainment Average Unit Cost for the missile is .005.
There are no costs reflected for fielding.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	2.0	---	---	---	2.0
Industrial Fund	---	---	---	---	---
Total	2.0	---	---	---	2.0

N-43 V-22

92-073

*** UNCLASSIFIED ***

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 1992

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1. **Designation and Nomenclature (Preferred Name):**
V-22 Joint Services Advanced Vertical Lift Aircraft (Osprey)

CLEARED
FOR OPEN PUBLICATION

MAY 25 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

2. **DoD Component:** Navy

Joint Participants:
USMC,USN,USAF

3. **Responsible Office and Telephone Number:**

NAVAL AIR SYSTEMS COMMAND
PMA-275
WASHINGTON, DC 20361-1275

COL James H. Schaefer
Assigned: January 19, 1990
AV 222-7414 COMM (703) 692-7414

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0603203N
PE 0603256 (Shared) Navy proj-W1557
Project 642973
PE 0604222A, 0604262N
PE 1110011F (Shared) Proj. 643752

PE B6404D (Shared) Proj. 643752

PROCUREMENT:
APPN 1506 ICN 016300 (Navy)

*** UNCLASSIFIED ***

4. Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE M62470

5. Related Programs: None.

6. Mission and Description:

The V-22 Osprey is a Department of the Navy program for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the strike rescue needs of the Navy, and the special operations needs of the Air Force. The V-22 will replace the CH-46 and CH53A/D in the Marine Corps, and the HH-3A in the Navy, and will supplement H-53, H-60 and C-130 in the Air Force. The V-22 will be capable of flying over 2000 nautical miles without refueling, giving the services the advantage of a VSTOL aircraft that could rapidly self-deploy to any location in the world.

7. Program Highlights:

a. Significant Historical Developments --
Preliminary Design was initiated in April 1983 with Bell-Boeing. Allison Gas Turbine Division of General Motors Corp was selected for engine design. The V-22 program went through Milestone II (DSARC II) in April 1986 and was approved for entry into Full Scale Development on 1 May 1986, at which time the FSD contracts with Bell-Boeing and Allison were signed. First flight of aircraft #1 occurred 29 Mar 89. The Secretary of Defense removed funding for the V-22 FSD program in Apr 89. Congressional action funded the program in FY90 and FY91. DT IIA and B were completed. An 11 Jun 91 incident with Aircraft #5 resulted in a loss of the aircraft.

b. Significant Developments Since Last Report --
From 3 Feb to 22 May 92, the aircraft was evaluated under various environmental conditions. This test period was an outstanding success. On 20 Jul 92, Aircraft #4 with a crew of seven crashed into the Potomac River near Quantico, Va., due to failure of a section of interconnecting drive shaft. Investigation indicated the failure was not related to tiltrotor design technology. The V-22 FSD program closed out with 781 flight test hours in 645 flights. On 22 Oct 92, the FSD airframe contract was terminated. At the same time, a letter contract was awarded to Bell-Boeing to begin an Engineering and Manufacturing Development Program (EMD). A letter contract was awarded to Allison on 29 Dec 92 for the associated EMD engines. The funds appropriated in FY92 and FY93 and subsequent fiscal years will be used for the EMD program. An Acquisition Program Baseline

7b. Program Highlights (Cont'd):

Agreement (APBA) has not been approved for the EMD program. This approval is not anticipated until late Dec 93 or early Jan 94.

The V-22 cannot meet its mission requirement due to added weight. Weight reduction plans are in place.

c. Changes Since As Of Date -- None

8. Threshold Breaches:
There is currently a RDT&E Cost breach to the Acquisition Program Baseline dated 30 Dec 90. There are no Nunn McCurdy unit cost breaches that are applicable to this program.

9. Schedule:

a. Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone 0 (DEPSECDEF MEMO)	DEC 81	DEC 81	DEC 81
Milestone I (DSARC I)	DEC 82	DEC 82	DEC 82
Preliminary Design Contract Award	APR 83	APR 83	APR 83
Milestone II (DSCARC II)	APR 86	APR 86	APR 86
FSD Contract Award	MAY 86	MAY 86	MAY 86
Production Contract Award (Long Lead AAC)	JAN 89	JAN 86	MAR 89
Operational Testing IIA	AUG 89	N/A	N/A
Milestone IIIA (USMC Pil Prod)	DEC 89	N/A	N/A
Operational Testing IIB	AUG 90	N/A	N/A
Milestone IIIB (All Serv Ltd Prod)	DEC 90	N/A	N/A
Operational Testing IIIC (OPEVAL)	AUG 91	N/A	N/A
Operational Testing IID (AF OPEVAL)	AUG 91	N/A	N/A
First Fleet Deliveries	DEC 91	N/A	N/A
Milestone IIIC (USN/MC/A Full Production)	DEC 91	N/A	N/A
USMC IOC (5 Acft Trng Det)	SEP 92	N/A	N/A
USAF IOC (6 Acft Mission Capable)	SEP 94	N/A	N/A
USA IOC (First Operational Company Equipped)	SEP 95	N/A	N/A

b. Previous Change Explanations --

Production Contract award (long lead AAC) date reflects contractual agreement. Impact of production termination, 19 Apr 89. Army milestones no longer applicable. OTIIA added back into the schedule. Schedule milestones are remaining "not applicable" for future schedule milestones due to production termination.

9c. Schedule (Cont'd):

c. Current Change Explanations -- None

d. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated 30 December 1990.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Folded					
Length (ft)	62.24	62.24	/ 62.24		N/A
Width (ft)	18.42	18.42	/ 18.42		N/A
Height (ft)	17.98	17.98	/ 17.98		N/A
Unfolded					
Length (ft)	57.33	57.33	/ 57.33		N/A
Width (ft)	83.83	83.83	/ 83.83		N/A
Height (ft)	21.73	21.73	/ 21.73		N/A
Empty Weight (lbs)	31786	31786	/ 31786		N/A
Readiness, Msn Capability Rate (% MC)	70	70	/ 70		N/A
Mission Complete Probability, Rate (MFHBMA Design Controllable) (%)	98	98	/ 98		N/A
Direct Maintenance Manhours per Flight Hour, Design Controllable:					
Org Level, Unscheduled (corrective)	7.0	7.0	/ 7.0		N/A
Org Level, Scheduled (preventive)	2.5	2.5	/ 2.5		N/A
World-wide Self-Deployment (nm) (minimum distance)	2100	2100	/ 2100		N/A
Continuous Cruise Speed (kts)	250	250	/ 250		N/A
Dash Speed (kts)	275	275	/ 275		N/A

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Instantaneous G-Loading					
Plus	4.0	4.0	/ 4.0		N/A
Minus	-1.0	1.0	/ 1.0		N/A
Troop Capacity	24	24	/ 24		N/A
External Cargo (lbs)	10000	10000	/ 10000		N/A

b. Previous Change Explanations --

Impact of production program termination. "Not applicables" reflect the termination of production.

c. Current Change Explanations -- NONE

d. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated 30 December 1990.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	2443.7	1973.3	4152.1
Procurement	20493.1	0.0	196.7
Flyaway	(15517.1)		(196.7)
Other Weapon Systems Cost	(3299.6)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(1676.4)		(0.0)
Construction (MILCON)	136.2	0.0	6.2
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 86 Base-Year $	23073.0	1973.3	4355.0

11a. Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	6589.3	93.2	752.8
Development (RDT&E)	(181.5)	(93.2)	(716.9)
Procurement	(6371.1)	(0.0)	(34.7)
Construction (MILCON)	(36.7)	(0.0)	(1.2)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	29662.3	2066.5	5107.8
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	913	0	0
Total	913	0	0

There are six RDT&E aircraft that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated 30 December 1990.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	5107.8	3587.1	5107.8
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2625.2	26864.2	172.9	29662.3
Previous Changes:				
Economic	-6.6	-1.4	-0.1	-8.1
Quantity	-77.0	-20095.5	-	-20172.5
Schedule	+0.6	-	+7.8	+8.4
Engineering	-	-	-	-
Estimating	+798.2	-93.1	-173.2	+531.9
Other	-	-	-	-
Support	-	-6434.9	-	-6434.9
Subtotal	+715.2	-26624.9	-165.5	-26075.2
Current Changes:				
Economic	-2.8	+0.1	+0.1	-2.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1531.4	-8.0	-0.1	+1523.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1528.6	-7.9	-	+1520.7
Total Changes	+2243.8	-26632.8	-165.5	-24554.5
Current Estimate	4869.0	231.4	7.4	5107.8

I3a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2443.7	20493.1	136.2	23073.0
Previous Changes:				
Quantity	-72.9	-15237.6	-	-15310.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+636.5	-76.0	-130.0	+430.5
Other	-	-	-	-
Support	-	-4976.0	-	-4976.0
Subtotal	+563.6	-20289.6	-130.0	-19856.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1144.8	-6.8	-	+1138.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1144.8	-6.8	-	+1138.0
Total Changes	+1708.4	-20296.4	-130.0	-18718.0
Current Estimate	4152.1	196.7	6.2	4355.0

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation rates offset by impact of program funding termination.

Quantity: Impact of program funding termination. FY 91 Congressional appropriation.

Schedule: Air Force simulator modification rescheduled one year.

Engineering: Air Force deletion of IDADS and addition of EW analysis offset by impact of program funding termination.

Estimating: Reprogrammings, budget adjustments, reprice of Air Force ECP offset by program funding termination. SBIR assessment. Contract price escalation clause

13b. Cost Variance Analysis (Cont'd):

adjustment and correction of error. Air Force transfer within program element. Congressional appropriation of FY92 funds and accounting adjustments.

Procurement

Economic: Revised escalation rates offset by impact of program funding termination.

Quantity: Army withdrawal, Air Force reduction in quantity offset by impact of program funding termination.

Schedule: Navy and Air Force rephase buy schedule offset by impact of program funding termination.

Estimating: Reprice to reflect lower quantities, GFE to CFE changes, and tooling refinements offset by impact of program funding termination. Congressional appropriation of advanced procurement. Congressional reprogramming from APN to R&D. General reprogramming and budget adjustments. Reprogramming to other Navy programs and expired funds. Inflation offset.

Support: Army withdrawal and impact of program funding termination.

MILCON

Economic: Revised escalation rates offset by impact of program funding termination.

Schedule: Air Force rephase of facilities offset by impact of program funding termination.

Estimating: Estimating refinements and impact of program funding termination.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-2.8
Adjustment for Current & Prior Inflation. (Estimating)	+2.2	+2.8
Adjustment for actuals (Navy)(FY86-91) (Estimating)	-5.3	-6.4
Termination of FSD airframe contract (Navy)(FY88/89) (Estimating)	-71.3	-78.0

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
FY1992/Prior Year Actual Update and PEO/Project Admin Changes (Navy) (Estimating)	-25.1	-31.3
Congressional Appropriation (Estimating)	+559.3	+714.4
PBD707 (Navy) (Estimating)	+686.3	+931.3
Descope ENSIP effort on engine contract (Air Force)(FY88/89) (Estimating)	-1.3	-1.4
RDT&E Subtotal	+1144.8	+1528.6
(2) Procurement		
Revised economic esealation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1
Termination FSD contract (Navy)(FY89) (Estimating)	-7.7	-9.0
Adjustment for accounting actuals (Navy)(FY89) (Estimating)	+1.0	+1.1
Procurement Subtotal	-6.8	-7.9
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	--	-0.1
MILCON Subtotal	--	--

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
40.180	-4.900	-6.700	0.800	--	--	--	2.900	-7.900	32.280

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
32.489	--	--	--	--	--	--	--	--	N/A

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

AIRFRAME FSD:

	Initial Contract Price		
	Target	Ceiling	Qty
BELL-BOEING, Fort Worth, TX N00019-85-C-0145, FPI Award: May 1, 1986 Definitized: May 1, 1986	$1714.0	$1810.0	6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1747.0	$1747.0	6	$1747.0	$1747.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-108.3	$-59.8
Cumulative Variances To Date (09/30/92)	$-108.3	$-59.8
Net Change	$0.0	$0.0

Explanation of Change:

Contract line items reported in this section were terminated 22 Oct 92. The ceiling price was reduced $87.0M pending receipt of termination proposal and final negotiation. Contract termination definitization planned for 31 Oct 93.

ENGINE FSD:

	Initial Contract Price		
	Target	Ceiling	Qty
General Motors Corp., Indianapolis, IN N00019-85-C-0034, FFP Award: May 1, 1986 Definitized: May 1, 1986	$76.4	N/A	21

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$141.7	N/A	21	$141.7	$141.7

15. Contract Information (Cont'd):
Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Technology Effort:	Initial Contract Price Target	Ceiling	Qty
Bell-Boeing, Fort Worth, TX N00019-91-C-0172, CPFF Award: June 10, 1991 Definitized: May 14, 1992	$75.5	$0.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$110.5	$0.0	0	$110.5	$110.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.1	$-0.9
Cumulative Variances To Date (01/31/93)	$0.8	$-6.4
Net Change	$0.9	$-5.5

Explanation of Change:

Positive cost variance is due to the concurrent engineering approach and lower labor rates resulting from increased business base attributable to the EMD contract.

Schedule variance is due almost exclusively to the failure of the proprotor gearbox loss of lubrication test.

EMD:	Initial Contract Price Target	Ceiling	Qty
Bell-Boeing, Arlington, VA N00019-93-C-0006, Letter Award: October 22, 1992 Definitized: February 28, 1994	$0.0	$0.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$0.0	$0.0	0	$0.0	$0.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

15. **Contract Information (Cont'd):**
A letter contract with Bell-Boeing was awarded on 22 Oct 92. At the time of contract, the limitation of government liability was set at $550M pending receipt of a proposal and negotiation of the contract values.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 66.7% (12 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 81.8% ($4176.5 / $5107.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	3937.7	77.6	431.5	422.2	4869.0
Procurement	231.4	-	-	-	231.4
MILCON	7.4	-	-	-	7.4
O&M	-	-	-	-	-
Total	4176.5	77.6	431.5	422.2	5107.8

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: RDT&E - All Sources								
1982				1.5	1.3	1.3	1.1	7.6
1983				37.3	34.5	34.5	34.5	4.9
1984				88.9	85.2	85.2	84.9	3.8

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: RDT&E - All Sources (Cont'd)								
1985				175.0	173.0	173.0	170.5	3.4
1986				517.4	526.1	526.1	522.6	2.8
1987				405.5	424.5	424.5	418.8	2.7
1988				398.2	430.8	430.8	424.5	3.0
1989				250.7	282.6	282.6	265.0	4.2
1990				213.2	250.2	250.2	186.8	4.0
1991				198.6	241.4	241.3	99.5	4.3
1992				620.2	773.7	577.4	0.3	2.8
1993				559.3	714.4			2.4
1994				59.4	77.6			2.3
1995				322.7	431.5			2.3
1996				170.4	233.0			2.2
1997				70.8	99.0			2.2
1998				55.2	78.8			2.2
1999				7.8	11.4			2.2
Subtot				4152.1	4869.0	3026.9	2208.5	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: Procurement - All Sources								
1989				196.7	231.4	231.4	79.9	4.2
Subtot				196.7	231.4	231.4	79.9	
Appropriation: MILCON - All Sources								
1990				6.2	7.4			4.0
Subtot				6.2	7.4			
Appropriation: O&M - All Sources - None.								
Total				4355.0	5107.8	3258.3	2288.4	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1982				1.5	1.3	1.3	1.1	7.6
1983				37.3	34.5	34.5	34.5	4.9
1984				88.9	85.2	85.2	84.9	3.8
1985				174.4	172.4	172.4	169.9	3.4
1986				515.2	523.9	523.9	520.4	2.8
1987				402.7	421.6	421.6	415.9	2.7
1988				374.9	405.6	405.6	399.4	3.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1989				247.3	278.8	278.8	261.9	4.2
1990				213.2	250.2	250.2	186.8	4.0
1991				192.0	233.4	233.4	95.9	4.3
1992				608.2	758.7	567.8		2.8
1993				559.3	714.4			2.4
1994				59.4	77.6			2.3
1995				322.7	431.5			2.3
1996				170.4	233.0			2.2
1997				70.8	99.0			2.2
1998				55.2	78.8			2.2
1999				7.8	11.4			2.2
Subtot				4101.2	4811.3	2974.7	2170.7	

NOTE: FY 1983 $'s reflect $29.9M of Army funds (PE 060422A)

Appropriation: 1506 Aircraft Procurement, Navy

1989				196.7	231.4	231.4	79.9	4.2
Subtot				196.7	231.4	231.4	79.9	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1205 Military Construction, Navy								
1990				6.2	7.4			4.0
Subtot				6.2	7.4			
Navy				4304.1	5050.1	3206.1	2250.6	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1985				0.6	0.6	0.6	0.6	3.4
1986				2.2	2.2	2.2	2.2	2.8
1987				2.8	2.9	2.9	2.9	2.7
1988				23.3	25.2	25.2	25.1	3.0
1989				3.4	3.8	3.8	3.1	4.2
1990								4.0
1991				6.6	8.0	7.9	3.6	4.3
1992				12.0	15.0	9.6	0.3	2.8
Subtot				50.9	57.7	52.2	37.8	
USAF				50.9	57.7	52.2	37.8	
Grand Total				4355.0	5107.8	3258.3	2288.4	

17. **Production Rate Data:**

a. Production Baseline Rate - None.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	6/4
Procurement	0/0

d. Approved Design-to-Cost Objective -- N/A.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules -- None

b. Costs -- None.

c. Contractor Support Costs -- None.

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: LCAC

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION

MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

2

1. **Designation and Nomenclature (Preferred Name):**
LCAC/Landing Craft, Air Cushion

2. **DoD Component:** Navy

Joint Participants:
N/A

3. **Responsible Office and Telephone Number:**
AMPHIBIOUS WARFARE PROGRAM OFFICE (PMS377)
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, DC 20362-5101

MR. E. E. SHOULTS
Assigned: April 29, 1985
AV 332-8511 COMM (703) 602-8511

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604567N (Shared) Project 1803, S0857
PROCUREMENT:
APPN 1611 ICN 5105 (Navy)
MILCON:
PE 0204796N (Shared), 0805796N (Shared)

No Security Objection
to Open Publication
~~(AS AMENDED)~~
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MAY 26 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

5. **Related Programs:**
AALC; LHD; LSD 41; LSD 41 (CV)

6. Mission and Description:
The LCAC program has been established to transport weapon systems, equipment, cargo, and personnel of the assault elements of the Marine air/ground task force from ship to shore and across the beach. The LCAC is a fully amphibious air cushion vehicle capable of operating from existing and future amphibious well deck ships. Having an on-cushion length of 88ft and beam of 47ft, the LCAC can carry a 60 ton payload (75 ton overload capacity) and provides drive through capability by means of ramps forward and aft.

7. Program Highlights:
a. Significant Historical Developments --
In 1970, contracts were awarded for the design and construction of prototype Amphibious Assault Landing Craft (AALC). Results from the test program led to the follow-on LCAC production program. Bell Aerospace, Textron was competitively awarded contracts for production of six craft. The first LCAC successfully completed Acceptance Trials on 7 December 1984 at the Naval Coastal Systems Center (NAVCOASTSYSCEN) in Panama City, Florida. During the initial phase of operational testing (OT-IIIA) early in 1985 the LCAC met all mission specifications. Discrepancies affecting craft reliability were identified and effective correction of these discrepancies were shown during Operational Testing (OT-IIIB) in April 1987. Approval for Full Production was granted by ASN in June 1987.

A second source, Lockheed Shipbuilding Company, was selected to produce two FY85 craft in Sep 1985. Subsequently Avondale Gulfport Marine (AGM) obtained the contract from Lockheed.

A Mine Countermeasure, Air Cushion (MCAC) DEMVAL was completed in June 1988 demonstrating that LCAC is an effective MCM Platform using equipment of existing Fleet designs.

Successful Shock Test Trials were completed on board LSD 44 on 15 December 1989.

A successful lashing test in March 1990 demonstrated that an M1A1 Main Battle Tank (MBT) can be carried by an LCAC in accordance with the Top Level Requirement (TLR).

As of 31 Dec 91, production contracts have been awarded for a total of 72 craft and 39 craft had been delivered.

b. Significant Developments Since Last Report --

The Textron Marine Systems (TMS) FY91 production contract option for 12 craft in FY92 was awarded in May 92.

Avondale Gulfport Marine (AGM) delivered 4 craft and TMS delivered 10

7b. Program Highlights (Cont'd):

craft in 1992.

A Demonstration and Validation of LCAC Arctic operations capability, an FY88 Congressional interest item, was successfully completed in March 1992.

Avondale Gulfport Marine (AGM) has submitted several Requests for Equitable Adjustment (REAs) based on claims of Navy's breach of contract, wrongful rejection of craft, and rejection of technical manuals.

The LCAC Program has been shown to satisfy the mission requirement.

c. Changes Since As Of Date --

A FFP contract was awarded to TMS on 12 Jan 93 for 7 craft. The award criteria was based on a winner-take-all approach. For AGM, the result is only one craft remaining in production with a June 1993 delivery date.

8. Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) dated 20 April 90 breaches or Nunn McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Milestone II SAIP	FEB 80	FEB 80	FEB 80
MENS Approved	OCT 80	OCT 80	OCT 80
Detail Design/Long-Lead Material Contract	JUN 81	JUN 81	JUN 81
Milestone IIIA Approval of Lead Production	DEC 81	DEC 81	DEC 81
Contract Award	FEB 82	FEB 82	FEB 82
First Craft Delivery	DEC 84	DEC 84	DEC 84
Milestone IIIB Approval for Full Production	JUL 85	JUN 87	JUN 87
Material Support Date	APR 88	NOV 91	NOV 91
Naval Support Date	JAN 90	NOV 91	NOV 91
Initial Operational Capability	JUL 86	DEC 86	DEC 86

IOC - Reflects date the lead craft were ready for operational deployment

9b. Schedule (Cont'd):

b. Previous Change Explanations --

The Milestone IIIB Approval for Full Production occurred later than the Production Estimate due to reliability issues.
As a result of Ships Parts Control Center not being ready to support the LCAC Program with stocked parts, MSD was rescheduled to Nov 91. NSD was rescheduled to Nov 91 based on slippage of the Full Mission Trainer. Correction of operating problems surfaced during operational testing on LCAC 1, which resulted in IOC slippage of 5 months.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
SECNAV Memo dated December 21, 1981, Subject: "LCAC Milestone IIIA DNSARC Decision Memorandum"; Approved LCAC NDCP dated May 25, 1983.

Approved Program:
NAE Approved Acquisition Program Baseline dated 20 April 1990.

10. Performance Characteristics:

a. Performance --

	PdR	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Operating Crew	5	5	/ 5	5	5
Troop Capacity (Internal)	24	24	/ 24	24	24
Cargo Deck Area (ft2)	1,800	1809	/ 1809	1,809	1,809
Length-On Cushion (ft)	88'	87'11"	/ 87'11"	87'11"	87'11"
Beam-On Cushion (ft)	47'	47'	/ 47'	47'	47'
Speed (kts)	35	40+	/ 40+	40+	40+
Design Payload (lbs)	120,000	120,000	/ 120,000	120,000	120,000
System Reliability (%)	90	96	/ 96	96	96
Maintainability MMH/OH Total (CM&PM)	34	34	/ 34	29.6	34
Unrefueled Range	195	100	/ 100	195+	195+

Demonstrated performance for the cargo deck area exceeds the production estimate.

Trials have shown that the craft exceeds minimum speed requirements.

The approved Top Level Requirement (TLR), dated 22 April 1980, Threshold for System Reliability % is 90. Improved reliability based

10a. **Performance Characteristics (Cont'd):**
on demonstrated performance.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
SECNAV Memo dated December 21, 1981, Subject: "LCAC Milestone IIIA DNSARC Decision Memorandum"; Approved LCAC NDCP dated May 25, 1983.

Approved Program:
NAR Approved Acquisition Program Baseline dated 20 April 1990.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	21.2	33.5	31.3
Procurement	1023.6	2128.6	1838.5
Sailaway	(1006.9)		(1834.8)
Peculiar Support	(3.3)		(3.7)
Initial Spares	(13.4)		(0.0)
Construction (MILCON)	58.5	87.0	92.9
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 82 Base-Year $	1103.3	2249.1	1962.7
Escalation	507.4	623.1	431.3
Development (RDT&E)	(0.2)	(0.0)	(-0.6)
Procurement	(489.3)	(596.2)	(401.1)
Construction (MILCON)	(17.9)	(26.9)	(30.8)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1610.7	2872.2	2394.0
b. Quantity --			
Development (RDT&E)		N/A	0
Procurement	60	105	91
Total	60	105	91

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

11e. Total Program Cost and Quantity (Cont'd):

e. References --

Production Estimate:
SECNAV Memo dated December 21, 1981, Subject: "LCAC Milestone IIIA DNSARC Decision Memorandum"; Approved LCAC NDCP dated May 25, 1983.

Approved Program:
NAE Approved Acquisition Program Baseline dated 20 April 1990.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2394.0	2272.4	2394.0
(2) Quantity	91	84	91
(3) Unit Cost	26.308	27.052	26.308
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	4.6	4.6	4.0
Less CY Adv Proc	4.6	4.6	4.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Note: Post Delivery Costs are reflected in Current Procurement for FY 93 and FY 94.

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	21.4	1512.9	76.4	1610.7
Previous Changes:				
Economic	-2.8	-436.2	-4.6	-443.6
Quantity	-	+718.3	-	+718.3
Schedule	-	+28.5	-	+28.5
Engineering	-	+2.8	-	+2.8
Estimating	+12.1	+310.8	+49.0	+371.9
Other	-	-	-	-
Support	-	-16.2	-	-16.2
Subtotal	+9.3	+608.0	+44.4	+661.7
Current Changes:				
Economic	-	-31.5	-0.4	-31.9
Quantity	-	+119.5	-	+119.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+30.7	+3.3	+34.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+118.7	+2.9	+121.6
Total Changes	+9.3	+726.7	+47.3	+783.3
Current Estimate	30.7	2239.6	123.7	2394.0

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	21.2	1023.6	58.5	1103.3
Previous Changes:				
Quantity	-	+464.4	-	+464.4
Schedule	-	-1.2	-	-1.2
Engineering	-	+2.2	-	+2.2
Estimating	+10.1	+248.7	+32.7	+291.5
Other	-	-	-	-
Support	-	-13.0	-	-13.0
Subtotal	+10.1	+701.1	+32.7	+743.9
Current Changes:				
Quantity	-	+90.1	-	+90.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+23.7	+1.7	+25.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+113.8	+1.7	+115.5
Total Changes	+10.1	+814.9	+34.4	+859.4
Current Estimate	31.3	1838.5	92.9	1962.7

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation rates.

Estimating: Increase based on qualification of second source for LCAC construction; reduction based on returned cost for completed design and reduced R&D effort.

Procurement

Economic: Revised economic escalation rates.

Quantity: Increase based on addition of 24 craft (net change) and associated advance procurement and correction of prior SAR outfitting and post delivery changes from Support to Quantity.

Schedule: Increase based on rescheduling of 28 craft and

13b. Cost Variance Analysis (Cont'd):

associated advance procurement.

Engineering: Increase for arctic-configured LCAC.

Estimating: Increase based on: revised program estimates for re-estimation of contractor provisioning material, second source planning, contract cost growth, rephasing of program estimates, returned cost on completed craft, increased cost associated with program closeout, current and prior inflation offset, and correction of prior SAR outfitting and post delivery changes from Support to Estimating. Reduction based on: multi-year procurement savings, reduction of CFE spares, CAAS reduction for Civil Service Conversion, reduction in estimates, and revised post delivery estimates.

Support: Increase based on actual execution and initial ACU 4 COSAL buy and Post Delivery associated with additional 24 craft. Reduction based on revised program estimates, returned costs on completed craft, and mis-categorization of outfitting and post delivery as Support vice sailaway in prior SARs.

MILCON

Economic: Revised economic escalation rates.

Estimating: Increase based on addition of MILCON Projects to support additional craft and rephasing of MILCON Projects, current and prior inflation offset, and increased cost estimates. Reduction based on revised program estimates, and returned costs on completed projects.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised economic escalation indices. (Economic)	N/A	-31.5
Quantity Variance resulting from increase of 7 units. (Quantity)	+90.1	+119.5
Adjustment for Current & Prior Inflation. (Estimating)	+23.9	+31.0
Return Costs Adjustment (Estimating)	+0.2	+0.2
Revised Post Del Est (Estimating)	-0.4	-0.5
Procurement Subtotal	+113.8	+118.7

13c. **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
(2) MILCON		
Revised economic escalation indices. (Economic)	N/A	-0.4
Delete project in FY92 (Estimating)	-3.9	-5.8
Add project to FY95/Move project from FY95 to FY96 (Estimating)	-2.9	-4.6
Project moved from FY95 to FY96 (Estimating)	+8.5	+13.7
MILCON Subtotal	+1.7	+2.9

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
26.845	-5.225	0.062	0.313	0.031	4.460	--	-0.178	-0.537	26.308

15. **Contract Information** (Then-Year Dollars in Millions):

a. Procurement --

LCAC 37-48 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
TEXTRON MARINE SYSTEMS, NEW ORLEANS, LA N00024-89-C-2028, FPI Award: December 13, 1988 Definitized: December 13, 1988	$132.4	$144.6	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$133.4	$145.7	12	$130.6	$128.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.2	$-2.4
Cumulative Variances To Date (12/31/92)	$5.8	$-1.9
Net Change	$5.6	$0.5

Explanation of Change:

Cost Variance: The majority of favorable net change of $5.6M is due

15. Contract Information (Cont'd):
to construction labor efficiencies and related overhead and the transfer of residual material.

Schedule Variance: The majority of favorable net change of $0.5M is due to material and labor recoveries to support delivery of crafts 043-048.

The PM's Estimated Price at Completion takes the variances into consideration.

LCAC 34-36 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
AVONDALE GULFPORT MARINE, GULFPORT, MS			
N00024-89-C-2110, FPI	$42.6	$44.8	3
Award: December 13, 1988			
Definitized: December 13, 1988			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$42.8	$45.0	3	$39.7	$39.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$4.0	$-1.5
Cumulative Variances To Date (12/31/92)	$4.4	$-0.3
Net Change	$0.4	$1.2

Explanation of Change:

Cost Variance: The majority of favorable net change of $0.4M is due to support labor being less than planned and low value material earnings.

Schedule Variance: The majority of favorable net change of $1.2M is due to material and labor recoveries at craft delivery.

The PM's Estimated Price at Completion takes these variances into consideration.

LCAC 52-60 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
TEXTRON MARINE SYSTEMS, NEW ORLEANS, LA			
N00024-89-C-2028, FPI	$104.2	$112.8	9
Award: December 22, 1989			
Definitized: December 22, 1989			

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$104.8	$113.4	9	$102.3	$98.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.7	$3.0
Cumulative Variances To Date (12/31/92)	$0.8	$-3.8
Net Change	$2.5	$-6.8

Explanation of Change:

Cost Variance: The majority of favorable net change of $2.5M is identified with a subcontract accounting adjustment together with construction labor being less than planned.

Schedule Variance: The majority of unfavorable net change of $-6.8M is due to a budget catch-up to earnings for material received and earned in a prior period.

The PM's Estimated Price at Completion takes these variances into consideration.

LCAC 49-51 CONSTRUCTION:	Initial Contract Price		
	Target	Ceiling	Qty
AVONDALE GULFPORT MARINE, GULFPORT, MS N00024-89-C-2110, FPI Award: December 22, 1989 Definitized: December 22, 1989	$39.1	$41.1	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$39.4	$41.4	3	$37.0	$37.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$3.0	$0.2
Cumulative Variances To Date (12/31/92)	$6.3	$-2.5
Net Change	$3.3	$-2.7

Explanation of Change:

Cost Variance: The majority of favorable net change of $3.3M is due to Production, Labor, and Overhead rates being less than planned.

Schedule Variance: The majority of unfavorable net change of $-2.7M is due to Production labor being behind schedule.

The PM's Estimated Price at Completion takes these variances into

15. Contract Information (Cont'd):
consideration.

LCAC 61-72 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
TEXTRON MARINE SYSTEMS, NEW ORLEANS, LA N00024-91-C-2201, FFP Award: April 24, 1991 Definitized: April 24, 1991	$122.1	N/A	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$122.6	N/A	12	$122.6	$122.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.3	$0.6
Cumulative Variances To Date (12/31/92)	$-0.3	$11.9
Net Change	$0.0	$11.3

Explanation of Change:

Cost Variance: There is no change for the year.

Schedule Variance: The favorable variance of $11.3M is due to early receipt of low value material and earlier than planned progress billings.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's (PMs) Estimated Price at Completion reflects the current Firm Fixed Price (FFP) value of $122.6M . The PMs LRE is $127.1M which would result in a $4.5M contractor loss.

LCAC 73-84 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
TEXTRON MARINE SYSTEMS, NEW ORLEANS, LA N00024-91-C-2201, FFP Award: May 22, 1992 Definitized: May 22, 1992	$122.6	N/A	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$122.6	N/A	12	$122.6	$122.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$-1.4	$0.1
Net Change	$-1.4	$0.1

15. Contract Information (Cont'd):

Explanation of Change:

Cost Variance: The unfavorable cumulative variance of $-1.4M is chiefly due to greater than planned material costs.

Schedule Variance: There is no significant change for the year.

The Program Manager's (PMs) Estimated Price at Completion reflects the current Firm Fixed Price (FFP) value of $122.6M. The PMs LRE is $131.1M which would result in an $8.6M contractor loss.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 85.0% (17 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 98.7% ($2363.9 / $2394.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY77-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96)	Total
RDT&E	30.7	-	-	-	30.7
Procurement	2231.4	4.0	4.2	-	2239.6
MILCON	101.8	-	8.2	13.7	123.7
O&M	-	-	-	-	-
Total	2363.9	4.0	12.4	13.7	2394.0

16c. **Program Funding Summary (Cont'd):**

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1977				0.3	0.2	0.2	0.2	2.6
1978				2.1	1.5	1.5	1.5	6.8
1979				1.9	1.5	1.5	1.5	8.4
1980				9.2	8.2	8.2	8.2	10.6
1981				4.8	4.7	4.7	4.7	10.6
1982				5.2	5.3	5.3	5.3	7.6
1983				1.0	1.1	1.1	1.1	4.9
1984				0.8	0.9	0.9	0.9	3.8
1985				0.5	0.6	0.6	0.6	3.4
1986				2.6	3.1	3.1	2.5	2.8
1987				2.1	2.6	2.6	2.4	2.7
1988				0.8	1.0	0.9	0.6	3.0
Subtot				31.3	30.7	30.6	29.5	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1981				50.6	53.5	53.5	53.5	9.6
1982	3	55.0	120.5	106.0	115.4	115.4	113.7	7.5

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1983	3		80.7	63.2	69.9	69.3	67.6	3.8
1984	6		160.0	149.8	168.7	168.3	166.1	3.6
1985	9		202.2	229.5	263.1	255.6	247.4	2.1
1986	12		230.9	224.2	262.4	262.4	253.3	1.1
1987				21.2	25.3	25.0	24.6	1.5
1988				31.2	38.1	38.0	37.5	2.3
1989	15		260.6	243.7	304.1	299.0	274.8	2.8
1990	12		209.8	211.5	269.3	255.6	191.3	1.3
1991	12		205.7	205.6	267.5	241.3	65.1	1.3
1992	19		309.4	292.7	389.5	303.8	4.1	1.7
1993				3.4	4.6			2.4
1994				2.9	4.0			2.4
1995				3.0	4.2			2.3
Subtot	91	55.0	1779.8	1838.5	2239.6	2087.2	1499.0	
Appropriation: 1205 Military Construction, Navy								
1984				18.2	20.8	19.5	19.5	3.8
1985				16.5	19.4	19.4	19.4	3.4

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1205 Military Construction, Navy (Cont'd)								
1986				13.5	16.4	16.4	16.4	2.8
1987								2.7
1988								3.0
1989								4.2
1990								4.0
1991				15.8	22.7	10.3	8.3	4.3
1992				15.2	22.5	15.8	2.7	2.8
1993								2.4
1994								2.4
1995				5.2	8.2			2.3
1996				8.5	13.7			2.3
Subtot				92.9	123.7	81.4	66.3	
Grand Total	91	55.0	1779.8	1962.7	2394.0	2199.2	1594.8	

17. **Production Rate Data:**

a. Production Baseline Rate

The steady state full rate annual production approved at Milestone IIIB Decision dated 26 June 1987 was an average of 1 craft per month through the end of the total procurement.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		4.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		4.2		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	53/53

d. Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 91 - @ Peak Rate: 0.5/mo			
FY 82 Base-Year $	16.400	20.162	20.237
Then Year $	24.300	24.567	25.909
@ Qty 12 (1st three years) - @ Peak Rate: 0.5/mo			
FY 82 Base-Year $	23.800	34.683	28.825
Then Year $	30.000	38.358	31.742

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

LCAC Class Operating & Support (O&S) cost estimates are based on historical return costs from craft currently in the fleet and on projections based on the LCAC program Operational Support Costs and Requirements (OSCAR) data model as of December 1992. The O&S costs are presented per craft operation hour for underway and maintenance cost categories and per craft for crew personnel and indirect costs related to the infrastructure in place to support the LCACs. Direct Personnel costs are the annual cost for the five person crew manning an LCAC. Direct Operations consist of the cost of fuel, oil and lubricants to operate the craft. Direct Maintenance consists of interim maintenance support and the replacement of spares and consumable materials and equipment resulting from operations. Indirect costs include all direct and indirect training costs related to the LCAC and consumables and other technical and support services necessary to support the LCAC infrastructure. Personnel retirement costs are not included.

b. Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Craft	Avg Annual Cost Per Antecedent
Direct Personnel	0.1	N/A
Direct Operations	0.0	N/A
Direct Maintenance	0.0	N/A
Indirect Costs	0.1	N/A
Total	0.2	N/A

The estimated Direct Operations cost is $0.4K and Direct Maintenance cost is $1.7K per operational hour in FY 82 base year dollars. The Direct Personnel and Indirect Costs are based on an average annual cost per craft.

18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	9.3	1.3	1.3	8.7	20.6
Industrial Fund	---	---	---	---	---
Total	9.3	1.3	1.3	8.7	20.6

N-23 LHD 1

12-130

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: LHD - 1

AS OF DATE: December 31, 1992

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CLEARED FOR OPEN PUBLICATION
AS AMENDED
MAY 26 1993 9
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

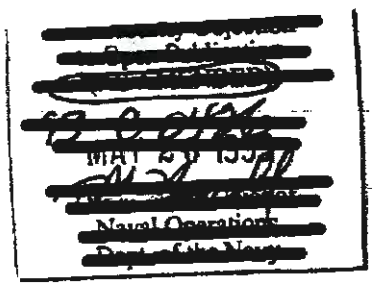
1. (U) **Designation and Nomenclature (Preferred Name):**
LHD 1 Amphibious Assault Ship

2. (U) **DoD Component:** Navy

3. (U) **Responsible Office and Telephone Number:**
AMPHIBIOUS WARFARE PROGRAM OFFICE (PMS377)
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, DC 20362-5101
MR. E.E. SHOULTS
Assigned: April 29, 1985
AV 332-8511 COMM (703) 602-8511

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 0603564N (Shared) Project 0408
PE 0604567N (Shared) Project 01803, S0857
PROCUREMENT:
APPN 1611 ICN 3035 (Navy)



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[redacted]

93-670

5. (U) **Related Programs:**
Landing Craft, Air Cushion (LCAC)

6. (U) **Mission and Description:**
The ships primary amphibious mission is to embark, deploy and land elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by combinations of these methods. LHD 1 Class has a secondary/convertible mission for sea control and power projection. The LHD is a modification of the LHA Class design, with significant upgrades in combat systems, medical spaces, chemical biological radiological defense, aviation ordnance handling, and landing craft handling capabilities. The LHD will partially offset the loss in lift capacity resulting from block retirements of aging amphibious ships in the 1990's.

7. (U) **Program Highlights:**

a. (U) Significant Historical Developments --
The LHD Program began in FY 1981 as part of an overall program to address impending block obsolescence of the Navy's amphibious lift capability. In June 1981, SECNAV proposed that the LHD have a convertible sea control mission; and, in November, directed that the Program be a modified LHA design.

A sole-source detail design and construction contract was awarded to Ingalls Shipbuilding Incorporated (ISI) in February 1984 for LHD 1. Construction began in September 1984. The ship was delivered in May 1989. Final Contract trials were completed in December 1989. A three-shot shock trial was conducted in March 1990. Post Shakedown Availability was completed in October 1990.

A competitive contract for LHD 2 (ESSEX), with options for LHD 3 (KEARSARGE) and 4 (BOXER), was awarded to ISI in September 1986. Construction on LHD 2 began in July 1988. LHD 2 was launched on 4 Jan 1991 and christened on 16 March 1991. The option for LHD 3 was exercised in November 1987 and construction began in March 1989. The option for LHD 4 was exercised in October 1988 and construction began in July 1990. Keel Laying ceremony for LHD 4 was held 8 April 1991. A competitive contract for the LHD 5 (BATAAN) was awarded to ISI on 20 December 1991.

b. (U) Significant Developments Since Last Report --
LHD 2 delivered 10 July 1992 and commissioning ceremony was held 17 October 1992. LHD 3 was launched 26 March 1992. The contract option for LHD 6 was exercised to Ingalls Shipbuilding Incorporated on 11 Dec 92 and incrementally funded with full funding requested in the FY94 Budget. An Acquisition Program Baseline request change was approved 21 May 92 based on vendor reduced business base which caused a procurement cost baseline breach.

7b. (U) Program Highlights (Cont'd):

The LHD 1 Program has been shown to satisfy the mission requirement.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 21 May 1992) breaches or Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I	OCT 81	OCT 81	OCT 81
Milestone II SAIP	JUL 82	JUL 82	JUL 82
Start Contract Design	AUG 82	AUG 82	AUG 82
Milestone IIIA Production-Decision	JUN 83	JUN 83	JUN 83
Award Lead Ship Contract	DEC 83	FEB 84	FEB 84
Milestone IIIB Production-Decision	JUL 85	AUG 85	AUG 85
Approve Full-Production (AFP)	AUG 85	AUG 85	AUG 85
Launch First Ship	AUG 87	AUG 87	AUG 87
Acceptance Trials (Lead Ship)	FEB 89	FEB 89	MAR 89
Lead Ship Delivery	MAR 89	MAR 89	MAY 89
Material Support Date	MAR 89	MAR 89	JUL 89
Naval Support Date	MAY 90	MAR 93	MAR 93
IOC	MAY 90	MAY 90	NOV 90

IOC - Reflects date the lead ship is ready for operational deployment.

b. (U) Previous Change Explanations --

Actual contract award was Feb 1984. Initial Builders Trials (BT) were not fully successful causing a six week delay in delivery. Due to late receipt of Provisioning Technical Documentation, the Material Support Date was rescheduled to Jul 89 and Naval Support Date was rescheduled to Oct 90. NSD was also extended to Mar 93 based on lack of support for 11 Shipbuilder Furnished Systems. IOC was rescheduled to Oct 90 due to the delivery slippage and the need for a longer Post Shakedown Availability (PSA). Subsequently, IOC was changed from Oct 90 to Nov 90 as a result of concurrent unplanned Carrier availabilities which delayed the start of PSA.

c. (U) Current Change Explanations -- None.

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Development Estimate:
SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 21 May 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Troops	1873	1873 / 1873	1894	1894
Vehicle Square (ft^2)	22900	22900 / 22900	22900	22900
Cargo Cube (ft^3)	109000	109000 / 109000	109000	109000
LCAC	3	3 / 3	3	3
Length (ft)	840	844 / 844	844	844
Beam (ft)	106	106 / 106	106	106
Draft (full load) (ft/inches)	26'	26'8" / 26'8"	26'8"	26'8"
Displacement (full load)	39400	40533 / 40533	40533	40533
Offload Capability (tons/hr)	300	300 / 300	300	300
Propulsion	Steam	Steam / Steam	Steam	Steam
Shaft Horsepower	70000	70000 / 70000	70000	70000
No. of Screws	2	2 / 2	2	2
Medical Facilities (operating rooms)	6	6 / 6	6	6
Speed (knots)	22	22 / 22	22	22

(b)(1) [redacted]

(U) Close In Weapon Systems (CIWS) - LHD 1 through 4 have 3 and LHD 5 and 6 have 2.

(U) Self Defense Missile Systems - LHD 1 through 4 have 2 NATO SEASPARROWS and LHD 5 and 6 have 2 NATO SEASPARROWS and 2 RAMS.

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --

The 1873 troop estimate was based on actual in place berthing accommodations on LHD 1. The 26/39,400 draft and displacement estimates were figures provided during the design development phase. The 26'8" and 40,533 reflects the full load weight estimate at the completion of the Contract Design.

c. (U) Current Change Explanations -- NONE

d. (U) References --

(U) Development Estimate:
SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 21 May 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	39.9	48.9	42.8
Procurement	2891.9	5253.0	5176.6
Sailaway	(2872.5)		(5154.4)
Peculiar Support	(10.1)		(11.5)
Initial Spares	(9.3)		(10.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 82 Base-Year $	2931.8	5301.9	5219.4
Escalation	1519.2	1550.2	1246.5
Development (RDT&E)	(3.7)	(6.0)	(5.5)
Procurement	(1515.5)	(1544.2)	(1241.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	4451.0	6852.1	6465.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3	6	6
Total	3	6	6

11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 21 May 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6465.9	6405.5	6465.9
(2) Quantity	6	6	6
(3) Unit Cost	1077.65	1067.58	1077.65
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	339.3	339.3	910.1
Less CY Adv Proc	339.3	339.3	16.3
Plus PY Adv Proc	0.0	0.0	303.1
Net Total	0.0	0.0	1196.9
(2) Quantity	0	0	1
(3) Unit Cost	N/A	N/A	1196.90

Note: The Current Year procurement for FY93 ($339.3M) includes $36.2M of outfitting and post delivery cost. The Budget Year UCR Baseline for FY 1994 includes $16.3M of outfitting in the CY Advance Procurement line.

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	43.6	4407.4	0.0	4451.0
Previous Changes:				
Economic	-0.3	-1498.7	-	-1499.0
Quantity	-	+4092.6	-	+4092.6
Schedule	+4.5	+40.5	-	+45.0
Engineering	-	-5.9	-	-5.9
Estimating	+0.5	-678.7	-	-678.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.7	+1949.8	-	+1954.5
Current Changes:				
Economic	-0.1	-94.6	-	-94.7
Quantity	-	-	-	-
Schedule	-	-112.5	-	-112.5
Engineering	-	+5.5	-	+5.5
Estimating	+0.1	+262.0	-	+262.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+60.4	-	+60.4
Total Changes	+4.7	+2010.2	-	+2014.9
Current Estimate	48.3	6417.6	-	6465.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.9	2891.9	0.0	2931.8
Previous Changes:				
Quantity	-	+2558.2	-	+2558.2
Schedule	+3.4	+52.1	-	+55.5
Engineering	-	-5.6	-	-5.6
Estimating	-0.5	-525.7	-	-526.2
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.9	+2081.8	-	+2084.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+4.0	-	+4.0
Estimating	-	+198.9	-	+198.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+202.9	-	+202.9
Total Changes	+2.9	+2284.7	-	+2287.6
Current Estimate	42.8	5176.6	-	5219.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation rates.

Schedule: Increase based on Rephasing of R&D to accommodate rescheduling of FY92 ship to FY91.

Estimating: Decrease based on returned cost for LHD 2, 3, and 4. Increases based on repricing of program requirements for LHD 4, 5, and 6; and increase to complete contract design on LHD 5.

Procurement

Economic: Revised economic escalation rates.

Quantity: Increase based on Addition of LHD 4 - 6, including associated advance procurement; and

13b. (U) Cost Variance Analysis (Cont'd):

re-categorization from prior SARs for outfitting and post delivery reported in Support.

Schedule: Increase based on mis-categorization of acquisition strategy change from Schedule to Estimating. Decrease based on rescheduling of LHD 5 ship and associated Advance Procurement.

Engineering: Decrease based on deletion of expanded Collective Protection System for LHD 5. Increase based on configuration for combat and ship system improvement.

Estimating: Reductions based on very favorable competitive Basic award (LHD 2, 3 and 4); returned cost for completed program; reduction for acquisition strategy change from annual to Multi-year procurement for LHD 5, 6, and 7; CAAS reduction for Civil Service Conversion; reduction for GFE repricing; and mis-categorization of acquisition strategy change from Schedule. Increases based on revised Program estimates for multiyear procurement (LHD 2, 3, and 4); addition of LHD 6; revised cost estimate based on LHD 5 bid price; re-categorization from prior SARs for outfitting and post delivery reported in support category.

Support: Increase in Outfitting and Post Delivery associated with LHD 2, 3 and 4; increased post delivery to cover trial card deficiencies on LHD 1; reductions reflecting deletion of FY93 ship; returned cost for outfitting on LHD 1, and mis-categorization from prior SARs for outfitting and post delivery reported as support vice sailaway.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	--	+0.1
RDT&E Subtotal	--	--
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-159.3

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Economic Adjustment for Negative Program Change. (Economic)	N/A	+64.7
Scheduling LHD 6 from FY96 to FY94 (Schedule)	--	-112.5
C3 Communication upgrade LHD6 (Engineering)	+4.0	+5.5
Adjustment for Current & Prior Inflation. (Estimating)	+44.9	+57.6
Work deferred until after delivery of LHD 2 (Estimating)	+11.0	+12.9
Lump Sum benefit request for equitable adjustment (Estimating)	+5.9	+7.2
Revised cost est. (Estimating)	-4.2	-5.7
Outfitting revised est. (Estimating)	+16.2	+22.2
Reduced vendor base (Estimating)	+125.1	+167.8
Procurement Subtotal	+202.9	+60.4

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1483.7	-265.6	-59.7	-11.3	-0.1	-69.4	---	---	-406.1	1077.7

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) LHD 2 CONSTRUCTION:

	Initial Contract Price		
	Target	Ceiling	Qty
INGALLS SHIPBUILDING INC., PASCAGOULA, MS N00024-86-C-2005, FPI Award: September 10, 1986 Definitized: September 10, 1986	$401.3	$453.3	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$488.1	$552.2	1	$546.1	$546.1

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-33.7	$-10.7
Cumulative Variances To Date (12/27/92)	$-42.5	$-6.0
Net Change	$-8.8	$4.7

Explanation of Change:

Cost Variance: The majority of unfavorable change is reported by the Contractor to be identified with labor, material and burden cost (overhead, MAPs and G&A) growth.

The Navy approved a reprogramming in Oct 88 in the amount of $226.8M. When the reprogramming and management reserve are taken into consideration, the true negative cost variance to the target cost is $151.7M.

Schedule Variance: The majority of favorable change is reported by the Contractor to be identified with labor, overhead and material related to schedule recovery to support delivery.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is equal to the Ceiling Price for the construction effort but slightly under target price for the long lead time material effort. The PM's LRE exceeds ceiling by $33.3M. The projected contractor loss is reduced to $25.6M when the potential ILS Award Fee and Cost of Money are considered.

The LHD 2 will not be reported in future SARs as the ship was delivered on 10 Jul 92 and is 98% complete.

(U) LHD 3 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
INGALLS SHIPBUILDING INC., PASCAGOULA, MS			
N00024-86-C-2005, FPI	$380.4	$409.2	1
Award: November 20, 1987			
Definitized: November 20, 1987			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$409.6	$441.2	1	$441.2	$441.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.8	$-12.8
Cumulative Variances To Date (12/27/92)	$-12.5	$-10.6
Net Change	$-7.7	$2.2

15. (U) Contract Information (Cont'd):

Explanation of Change:

Cost Variance: The majority of unfavorable change is reported by the Contractor to be identified with labor and burden costs being greater than anticipated.

The Navy approved a reprogramming in Mar 89 in the amount of $174.9M. When the reprogramming and management reserve are taken into consideration, the true negative cost variance to the target cost is $120.5M.

Schedule Variance: The majority of favorable change is reported by the contractor to be identified with material being received ahead of schedule together with favorable burden cost (MAP and G&A). This is offset by construction labor and related overhead being behind schedule. The PM projects ship delivery will slip from May 93 to Jul 93.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is equal to the Ceiling Price. The PM's LRE exceeds ceiling by $52.0M. The projected contractor loss is reduced to $46.2M when the potential ILS Award Fee and Cost Of Money are considered.

(U) LHD 4 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
INGALLS SHIPBUILDING, INC, PASCAGOULA, MS N00024-86-C-2005, FPI Award: October 3, 1988 Definitized: October 3, 1988	$366.9	$391.4	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$394.7	$421.6	1	$421.6	$421.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-16.9	$-21.4
Cumulative Variances To Date (12/27/92)	$-11.2	$-39.4
Net Change	$5.7	$-18.0

Explanation of Change:

Cost Variance: The majority of favorable change is reported by the Contractor to be identified with labor and burden costs (MAPs, overhead and G&A) savings being offset by material growth.

15. (U) Contract Information (Cont'd):

The Navy approved a reprogramming in Mar 89 in the amount of $164.7M. When the reprogramming and management reserve are taken into consideration, the true negative cost variance to the target cost is $125.4M.

Schedule Variance: The majority of unfavorable change is reported by the Contractor to be identified material and related burden costs (MAPs, overhead and G&A) not being issued due to construction labor being behind schedule. The PM projects ship delivery will slip from Oct 94 to Dec 94.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is equal to the Ceiling Price. The PM's LRE exceeds ceiling by $89.3M. The projected contractor loss is reduced to $84.5M when the potential ILS Award Fee and Cost of Money are considered.

	Initial Contract Price		
(U) LHD 5 CONSTRUCTION:	Target	Ceiling	Qty
INGALLS SHIPBUILDING, INC, PASCAGOULA, MS			
N00024-92-C-2204, FPI	$707.0	$808.0	1
Award: December 20, 1991			
Definitized: December 20, 1991			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$731.7	$832.4	1	$797.5	$794.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/27/92)	$-12.6	$5.6
Net Change	$-12.6	$5.6

Explanation of Change:

Cost Variance: The majority of unfavorable variance is reported by the contractor to be identified with engineering and material growth.

Schedule Variance: The majority of favorable variance is reported by the contractor to be identified with early receipt of material.

The PM's Estimated Price at Completion takes these variances into consideration.

15. (U) Contract Information (Cont'd):
The Program Manager's Estimated Price at Completion is based on a projected overrun of $126.0M which results in a net contractor profit of $24.7M.

(U) LHD 6 CONSTRUCTION:	Initial Contract Price Target	Ceiling	Qty
INGALLS SHIPBUILDING, INC, PASCAGOULA, MS N00024-92-C-2204, FPI Award: December 11, 1992 Definitized: December 11, 1992	$760.9	$779.2	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$760.9	$779.2	1	N/A	$770.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change:

Contractor Estimated Price at Completion and Variance information is not available since this contract was awarded on 11 Dec 92. Data reporting requirements do not require Contractor submission of cost and schedule data until 90 days after award.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 65.0% (13 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 84.2% ($5442.8 / $6465.9)

16b. (U) **Program Funding Summary (Cont'd):**

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	48.3	-	-	-	48.3
Procurement	5394.5	910.1	26.5	86.5	6417.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5442.8	910.1	26.5	86.5	6465.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1981				0.9	0.9	0.9	0.9	10.6
1982				11.1	11.4	11.3	11.2	7.6
1983				17.9	19.2	19.2	18.8	4.9
1984				0.8	0.9	0.9	0.9	3.8
1985				1.7	2.0	2.0	2.0	3.4
1986				0.3	0.4	0.4	0.4	2.8
1987				0.5	0.6	0.6	0.6	2.7
1988				0.6	0.8	0.8	0.8	3.0
1989				2.8	3.7	3.7	3.5	4.2

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1990				5.5	7.4	6.7	6.1	4.0
1991				0.7	1.0	1.0	0.8	4.3
Subtot				42.8	48.3	47.5	46.0	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1982				41.3	45.0	45.0	45.0	7.5
1983				48.6	53.7	53.7	53.0	3.8
1984	1	150.0	1115.7	1161.4	1307.8	1307.8	1286.2	3.6
1985				34.2	39.2	39.2	31.6	2.1
1986	1		777.7	713.3	834.9	808.4	753.7	1.1
1987				30.3	36.2	36.0	30.2	1.5
1988	1		653.3	625.7	764.0	684.8	588.8	2.3
1989	1		638.9	612.4	764.1	626.1	438.1	2.8
1990				37.5	47.7	47.7	31.5	1.3
1991	1		921.1	873.5	1136.7	933.9	84.5	1.3
1992				19.5	25.9	11.8	7.2	1.7
1993				249.3	339.3	167.5		2.4
1994	1		897.7	653.9	910.1			2.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1995				18.6	26.5			2.3
1996				7.9	11.5			2.3
1997				22.1	32.8			2.2
1998				10.2	15.5			2.2
1999				4.3	6.7			2.2
2000				12.6	20.0			2.2
Subtot	6	150.0	5004.4	5176.6	6417.6	4761.9	3349.8	
Grand Total	6	150.0	5004.4	5219.4	6465.9	4809.4	3395.8	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Not required for Programs that produce at a rate of less than six items per year.

17b. (U) **Production Rate Data (Cont'd):**

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		910.1		N/A	N/A
Procurement Qty		1		N/A	N/A
Proc. Unit Cost	N/A	910.100	N/A	N/A	N/A
FY 1995					
Procurement Cost		26.5		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		86.5		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	2/2

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

O&S costs for LHD 1 Class ships were developed from historical (VAMOSC) data for the antecedent LHA 1 Class as well as limited data that has come from the operations of LHD 1. Greater emphasis is still being placed on LHA 1 data for two reasons: the small size of the LHD 1 data, and a belief that the first few years of operations of a lead ship are not representative of the ship's future, "normal" operating costs.

Personnel retirement costs are included as part of indirect costs and are based on 33 percent of officer and enlisted direct personnel costs.

Assumed service life is stated as 40 years for ships of the LHD 1 Class. All costs are in FY82 constant dollars, the year of the first construction contract for an LHD 1 Class ship.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per LHD 1	Avg Annual Cost Per LHA 1 (Antecedent)
Direct Personnel	17.6	14.9
Direct Operations	9.6	10.2
Direct Maintenance	18.1	16.5
Indirect Costs	6.4	5.5
Total	51.7	47.1

c. (U) Contractor Support Costs -- None.

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93-317

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: PCKR IN MM SILO

AS OF DATE: December 31, 1992

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MAY 19 1993 10
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
LGM-118A/Land Based ICBM (Peacekeeper)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
OO-ALC/LM
Hill AFB
Ogden Air Logistic Center
Ogden, UT 84056-5990
COL JAMES MEYERS
Assigned: December 19, 1991
AV 458-8645 COMM 801/777-8645

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604312F (Shared) Project
PROCUREMENT:
APPN 3020 ICN MMXOLG (Air Force)
APPN 3020 ICN MMXYO (Air Force)
MILCON:
PE 0101215F

OASD(PA) DFOISR 93-C-514

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5. (U) Related Programs: None.

6. (U) Mission and Description:
The mission of the Peacekeeper weapon system is to enhance the deterrent posture of US strategic forces. Should deterrence fail, Peacekeeper must be able to effectively attack the full spectrum of designated targets with nuclear weapons. The system must provide a prompt retaliatory capability. The Peacekeeper missile has three solid propellant stages and a liquid fueled post-boost vehicle capable of delivering 10 multiple independently targetable reentry vehicles. This system replaces 50 Minuteman III missiles, but does not replace the Minuteman system.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --

The Defense Systems Acquisition Review Council (DSARC) I, held in 1976, selected Trench & Horizontal Multiple Protective Shelters for further validation. In 1978, at DSARC II the Air Force recommended use of multiple vertical protective structures as the basing mode.

In 1981, the horizontal multiple protective shelter basing mode was terminated and the President directed production of 100 M-X missiles. The President also directed interim deployment of 40 missiles in existing Minuteman and Titan silos while long-term basing options of deep basing, defended fixed basing, defended deceptive basing, and continuous patrol aircraft were studied. In late 1982, the President directed Closely Spaced Basing at F.E. Warren AFB, Wyoming. At this point, the M-X was given the name "Peacekeeper." In April 1983, the President recommended deployment of 100 Peacekeeper missiles in 100 Minuteman silos at F.E. Warren AFB. Direction was received in July 1985 to deploy not more than 50 missiles in Minuteman silos at F.E. Warren AFB. Initial Operating Capability (IOC) was achieved in December 1986. Program needs have been successfully met and Full Operational Capability (FOC) was achieved in December 1988, within cost and schedule.

The Research and Development (R&D) flight test program was completed in March 1989 with 18 successful flight tests. The system displayed accuracies better than the requirement at maturity. The Strategic Air Command (SAC) Operational Test and Evaluation (OT&E) program began in June 1989.

The fifth launch in the OT&E program (GT-05) that took place in March 91 exhibited the best accuracy to date. The sixth launch took place on 11 June 91. It was the first launch to carry a Global Positioning System (GPS) package. The Peacekeeper test program was enhanced by the Simulated Electronic Launch Peacekeeper (SELP) capability delivered to SAC in March 91. SELP provides the capability to

7a. (U) Program Highlights (Cont'd):

demonstrate critical hardware functions that cannot be tested during normal operations without expending Peacekeeper Aerospace Vehicle equipment (AVE) systems.

b. (U) Significant Developments Since Last Report --

On 28 Jan 92, the President directed the halt of new Peacekeeper production. This decision reduces the acquisition program to 102 missiles: 50 deployed, 37 for operational test and evaluation, and 15 for aging and surveillance. Contracts for FY91 procurement of solid motors will not be awarded.

The eighth and ninth OT&E launches took place on 4 March 92 and 1 July 92, respectively. Both were successful missions.

The tenth launch in the OT&E program (GT-10) that took place on 16 September 92 exhibited exceptional accuracy. The second Simulated Electronic Launch Peacekeeper (SELP) took place on 29 October 92 with great success in demonstrating critical Peacekeeper hardware and software functions. Guidance system reliability continues to improve with the Inertial Measurement Unit (IMU) and Specific Force Integrating Receiver (SFIR) updates. Mean time between recycles in Dec 92 increased to 9893 hours exceeding the mature subsystem goal of 6210 hours.

Decision was made to sustain Peacekeeper until the year 2003. Peacekeeper production close-out contracts will be awarded April through July 93.

This is the final submission of this Selected Acquisition Report (SAR); over 90 percent of planned acquisition expenditures have been made. Also, this final SAR will not be used for unit cost reporting purposes.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date — None.

8. (U) Threshold Breaches:

There are breaches to the Acquisition Program Baseline (APB) dated February 1991, and no Nunn-McCurdy unit cost reporting breaches.

(b)(1)

[redacted]

Ordnance Induced Shock Tests Complete	DEC 82	DEC 82	DEC 82
First Flight	JAN 83	JUN 83	JUN 83
Structure Load Tests Complete	JUN 83	JUN 83	JUN 83
First Production Contract Award	JAN 84	JAN 84	JAN 84
Propulsion Flight Proof Tests Complete	APR 84	JUL 84	JUL 84
First Assets Delivered (was IOC)	DEC 86	DEC 86	DEC 86
Full Operational Capability (FOC)	N/A	DEC 88	DEC 88

b. (U) Previous Change Explanations --

First flight delayed due to development problems and congressional restrictions which ran concurrently from January to June 1983. Propulsion Flight Proof Tests were completed late due to a redesign of the Stage IV propellant tank which required an additional flight proof test in July 1984.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
SDDM, dated February 14, 1980.

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 03 February 1991.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Development Estimate:
SDDM, dated February 14, 1980.

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 03 February 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	6018.2	5745.4	5719.1
Procurement	10292.0	7066.1	6862.7
Total Flyaway	(6645.9)		(4478.5)
Total Other Weapon Systems	(2546.2)		(989.6)
Peculiar Support	(795.7)		(1088.0)
Initial Spares	(304.2)		(306.6)
Construction (MILCON)	324.7	192.2	191.6
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 82 Base-Year $	16634.9	13003.7	12773.4
Escalation	5045.3	3216.3	3135.7
Development (RDT&E)	(878.9)	(686.2)	(683.4)
Procurement	(4086.2)	(2494.1)	(2416.7)
Construction (MILCON)	(80.2)	(36.0)	(35.6)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	21680.2	16220.0	15909.1

These total costs correspond to the $17.4B estimate (FY 82 dollars), $23.5B TY, for the Peacekeeper program based on the Report by the President's Commission on Strategic Forces, April 1983, and the President's letter, 19 April 1983, transmitting the Strategic Forces Technical Assessment Review (31 March 1983), to the Congress. It does not include $3199.5 in FY 82 and prior missile costs (development of flight test missiles and all equipment leading to first flight) or $1399.2 in FY 83 and prior spent on earlier basing modes (Multiple Protective Shelters, horizontal shelter system, interim deployment in 40 Minuteman silos, and Closely Spaced Basing)(then-year dollars in millions).

Construction figure does not include $86.1M in FY82 and prior year funds (then-year dollars) associated with earlier basing modes.

The 102 production missiles equates to 50 deployed missiles, 37 operational test and evaluation missiles, and 15 aging and

11a. (U) Total Program Cost and Quantity (Cont'd):
surveillance missiles.

PCKR IN MM SILO

b. (U) Quantity --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	N/A	0
Procurement	223	114	102
Total	223	114	102

The Peacekeeper program has 20 R&D units which were not considered fully configured end items.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
SDDM, dated February 14, 1980.

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 03 February 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	15909.1	16184.4	15909.1
(2) Quantity	102	114	102
(3) Unit Cost	155.97	141.97	155.97
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	27.1	27.1	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	27.1	27.1	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

The 102 production missiles equates to 50 deployed missiles, 37 operational test and evaluation missiles, and 15 aging and surveillance missiles.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	6897.1	14378.2	404.9	21680.2
Previous Changes:				
Economic	-148.8	-446.9	-6.6	-602.3
Quantity	-	-6258.6	-	-6258.6
Schedule	-	+1161.6	-	+1161.6
Engineering	-	-581.6	-97.1	-678.7
Estimating	-343.9	+3078.4	-14.6	+2719.9
Other	-	-	-	-
Support	-0.8	-1777.5	-59.4	-1837.7
Subtotal	-493.5	-4824.6	-177.7	-5495.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-250.9	-	-250.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.1	-4.0	-	-5.1
Other	-	-	-	-
Support	-	-19.3	-	-19.3
Subtotal	-1.1	-274.2	-	-275.3
Total Changes	-494.6	-5098.8	-177.7	-5771.1
Current Estimate	6402.5	9279.4	227.2	15909.1

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	6018.2	10292.0	324.7	16634.9
Previous Changes:				
Quantity	-	-3533.9	-	-3533.9
Schedule	-	+20.5	-	+20.5
Engineering	-	-365.0	-72.5	-437.5
Estimating	-294.6	+1873.9	-11.4	+1567.9
Other	-	-	-	-
Support	-1.3	-1250.2	-49.2	-1300.7
Subtotal	-295.9	-3254.7	-133.1	-3683.7
Current Changes:				
Quantity	-	-157.3	-	-157.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.2	-5.6	-	-8.8
Other	-	-	-	-
Support	-	-11.7	-	-11.7
Subtotal	-3.2	-174.6	-	-177.8
Total Changes	-299.1	-3429.3	-133.1	-3861.5
Current Estimate	5719.1	6862.7	191.6	12773.4

None

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Adjustment for current and prior year inflation.
Adjustment to Budget Authority FY87 increased risk to the program.
Adjustment for overinflated funding profile.
Adjustment for combined command withdrawal/withhold.

Support: Reduce development test data analysis to live within fiscal constraints. Reinstate essential development test data analysis previously reduced

13b. (U) Cost Variance Analysis (Cont'd):
by fiscal constraints.

Procurement

Economic:	Revised economic escalation indices.
Quantity:	Increased missile buy quantity by 12 to support Rail Garrison Basing.
	Reduction of 62 missiles.
	Further reduction of 59 missiles.
Schedule:	Adjustment for reduced annual purchases from 21 to 12 missiles.
Engineering:	Removal of hardware to support the 2nd set of 50 deployed missiles.
	Increase of 3 reentry systems for rebasing.
	Funds from AFLC to accomplish Sustaining Engineering.
	Deletion of 3 reentry systems.
Estimating:	Adjustment for reduced annual purchases from 21 to 12 missiles, current and prior year inflation, and a reduction in program funding.
	Adjustment for overinflated funding profile.
	Reduction for Military Personnel.
	Reduction for Government Furnished Material.
	IMU negotiation savings.
	Command withdrawal and reprogramming.
	Adjustment for current and prior year escalation.
Support:	Adjustment for reduced annual purchases from 21 to 12 missiles, current and prior year inflation, and an adjustment to the purchasing of initial spares.
	Removal of support for last 62 missiles.
	Removal of spares and support equipment for deployment of the 2nd set of 50 deployed missiles.
	Addition of START program support.
	Deletion of support to 59 reduced missiles.

MILCON

Economic:	Revised economic escalation indices.
Engineering:	Descope defense access roads due to reduced funding in FY85/86 President's Budget.
Estimating:	Adjustment for current and prior year inflation and refinement of estimate for storage facilities based on schedule change (May 88 Financial Review).
Support:	Removal of planning and design funds included in 30 June 89 SAR. These funds were not considered program unique..

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Adjustment for current and prior year inflation. (Estimating)	-2.5	
Adjustment for program requirement change. (Estimating)	-0.7	-1.1
RDT&E Subtotal	-3.2	-1.1
(2) Procurement		
Reduction from 114 to 102 missiles. (Quantity)	-157.3	-250.9
Requirements to complete program. (Estimating)	-2.5	-4.0
Adjustment for current and prior year inflation. (Estimating)	-3.1	
Reprogramming Action due to reduction of support requirement. (Support)	-11.7	-19.3
Procurement Subtotal	-174.6	-274.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
97.22	-5.91	51.51	11.39	-6.65	26.62	--	-18.21	58.75	155.97

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) REENTRY SYS FY88/89/90:	Initial Contract Price Target	Ceiling	Qty
TEXTRON DEFENSE SYSTEMS, WILMINGTON, MA F04704-88-C-0053, FPI/CPF Award: January 27, 1989 Definitized: January 27, 1989	$75.3	$79.6	12

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$145.5	$142.3	44	$145.8	$145.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$5.5	$-3.1
Cumulative Variances To Date (01/03/93)	$10.6	$-1.5
Net Change	$5.1	$1.6

Explanation of Change:

The ceiling price only applies to the FPI portion of the contract. The target price pertains to both the FPI and CPF portions. The target price decreased because the Contractor Estimated Price at Completion decreased.

The ceiling price decreased due to a calculation error in the last SAR submittal (the Sustaining Engineering effort (CPFF) was mistakenly included in the ceiling price).

The improved cost variance position is due to a reduction in personnel and continued efficiencies in support project management. Favorable indirect rates and lower than planned cost of materials also contributed to the improved cost variance.

The increase in favorable schedule variance was due to the fact that all hardware items on the last production buy have been delivered.

The negative schedule variance reported is because the contractor tracks and reports cost/schedule against their own aggressive internal schedule which they have not been able to meet. While the contractor is behind the internal schedule, the deliveries are three months ahead of the contractual schedule.

The Contractor and Program Manager Estimated Price at Completion decreased because an underrun was declared.

The difference between the Contractor and the Program Manager Estimated Price At Completion is attributed to independent forecasting methodologies used to price the work remaining. Both estimates are within approved funding.

The current cost and schedule variances are not forecasted to impact the contract performance at completion. This contract is over 90 percent complete. This is the final time this contract will be reported in the SAR.

15. (U) Contract Information (Cont'd):

(U) MGCS, 88/89/90:	Initial Contract Price Target	Ceiling	Qty
ROCKWELL INTERNATIONAL, ANAHEIM, CA F04704-88-C-0096, FPI/CPF Award: April 14, 1989 Definitized: April 14, 1989	$196.9	$207.7	44

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$388.8	$317.6	56	$383.6	$382.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$10.3	$1.3
Cumulative Variances To Date (12/31/92)	$10.5	$-0.6
Net Change	$0.2	$-1.9

Explanation of Change:

The ceiling price only applies to the FPI portion of the contract. The target price pertains to both the FPI and CPF portions.

The increase in the Current Contract Target and Ceiling Prices and the Contractor and Program Manger Estimate at completion are due to modifications such as: Peacekeeper Subsystem Hardware Requirements; Hardness Surveillance Test Program; and Supportability Improvement Effort added to the contract.

The positive net change in cost variance is due to lower labor costs in operations and early completion of major subcontracts.

The negative net change in schedule variance is due to delays in Engineering Change Proposal Efforts and a behind schedule position for the Engineering Hardness Assurance Test efforts.

The difference between the Contractor and the Program Manager Estimated Price At Completion is attributed to different forecasting methodologies used to price the work remaining. Both estimates are within approved funding.

The current cost and schedule variances are not forecasted to impact the contract performance at completion. The contract is over 90 percent complete. This is the final time this contract will be reported in the SAR.

15. (U) Contract Information (Cont'd):

(U) PBV, FY 88/89/90:	Initial Contract Price Target	Ceiling	Qty
ROCKWELL INTERNATIONAL, CANOGA PARK, CA F04704-89-C-0009, FPI/CPF Award: May 1, 1989 Definitized: May 1, 1989	$107.1	$110.6	32

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$153.8	$158.6	38	$146.8	$147.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$1.5	$1.6
Cumulative Variances To Date (08/28/92)	$2.7	$-2.0
Net Change	$1.2	$-3.6

Explanation of Change:

The ceiling price only applies to the FPI portion of the contract. The target price pertains to both the FPI and CPF portions.

The target price decreased as a result of the contractor's efficiencies. No target price increase to reflect the ceiling price increase because of the small probability of occurrence.

The ceiling price increased due to a potential termination liability for increased overhead rates which may not occur.

The increase in favorable cost variance is due to lower than anticipated manpower being expended in Support Services.

The unfavorable schedule variance reflects the "stop-work" due to the partial termination of the contract. When the cost accounts are finally closed this variance will be eliminated.

The difference between the Contractor and the Program Manager Estimated Price At Completion is attributed to independent forecasting methodologies used to price the work remaining. Both estimates are within approved funding.

The current cost and schedule variances are not forecasted to impact the contract performance at completion. The contract is over 90 percent complete. This is the final time this contract will be reported in the SAR.

15. (U) Contract Information (Cont'd):

(U) STAGE III, FY 88/89/90:	Initial Contract Price Target	Ceiling	Qty
HERCULES, MAGNA, UT F04704-88-C-0035, FPIF Award: May 1, 1989 Definitized: May 1, 1989	$151.9	$165.2	32

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$208.1	$225.6	45	$194.2	$191.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$8.4	$-4.2
Cumulative Variances To Date (12/31/92)	$12.8	$-2.0
Net Change	$4.4	$2.2

Explanation of Change:

The favorable increase in cost variance is due to a reduction in personnel, improvements in overhead, cost of money, and reduction in management reserve usage.

The favorable increase in schedule variance is due to the fact that all major deliveries have been made.

The decrease in the Contractor and Program Manger Estimated Price at Completion is due to contractor efficiencies.

The difference between the Contractor and the Program Manager Estimated Price At Completion is attributed to independent forecasting methodologies used to price the work remaining. Both estimates are within approved funding.

The current cost and schedule variances are not forecasted to impact the contract performance at completion. This contract is over 90 percent complete. This is the final time this contract will be reported in the SAR.

(U) STAGE II, FY 88/89/90:	Initial Contract Price Target	Ceiling	Qty
AEROJET, SACRAMENTO, CA F04704-88-C-0025, FPI/CPF Award: August 1, 1989 Definitized: August 1, 1989	$190.9	$191.7	37

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$269.9	$298.7	45	$269.9	$270.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.5	$-4.8
Cumulative Variances To Date (12/25/92)	$0.5	$-0.7
Net Change	$3.0	$4.1

Explanation of Change:

The ceiling price only applies to the FPI portion of the contract. The target price pertains to both the FPI and CPF portions.

The target price decreased due to an increase in contractor efficiencies.

The ceiling price decreased due to deletion of the undistributed budget for North American Rayon Company in June 1992.

The favorable increase in cost variance is due to deletion of Buy 8 production.

The favorable increase in schedule variance is due to the government's directed retime-phasing of the baseline.

The difference between the Contractor and the Program Manager Estimated Price At Completion is attributed to independent forecasting methodologies used to price the work remaining. Both estimates are within approved funding.

The current cost and schedule variances are not forecasted to impact the contract performance at completion. The contract is over 90 percent complete. This is the final time this contract will be in the SAR.

(U) STAGE I, FY 88/89/90:
THIOKOL CORPORATION, BRIGHAM CITY, UT
F04704-88-C-0015, FPI/CPF
Award: August 1, 1989
Definitized: August 1, 1989

Initial Contract Price		
Target	Ceiling	Qty
$225.9	$242.4	32

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$321.9	$354.7	45	$322.0	$324.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.3	$-1.0
Cumulative Variances To Date (12/27/92)	$5.8	$-3.3
Net Change	$10.1	$-2.3

Explanation of Change:

The ceiling price only applies to the FPI portion of the contract. The target price pertains to both the FPI and CPF portions.

The decrease in target price is due to contractor efficiencies.

The ceiling price increased due to an increase in authorized unpriced work (Propulsion Interface Test Equipment installation/integration) which resulted in an increase in negotiated cost.

The increase in the favorable cost variance was driven by a RIF of contractor personnel, favorable price variances on materials, and contractor efficiencies on the shop floor.

The worsening unfavorable schedule variance can be attributed to schedule slips for the Thrust Vector Actuator (TVA) and nozzle materials during the month of December.

The difference between the Contractor and the Program Manager Estimated Price At Completion is attributed to independent forecasting methodologies used to price the work remaining. Both estimates are within approved funding.

The current cost and schedule variances are not forecasted to impact the contract performance at completion. This contract is over 90 percent complete without Management Reserve. This is the final time this contract will be in the SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 100.0% (11 yrs/11 yrs)

(2) Percent Program Cost Appropriated: 100.0% ($15909.1 / $15909.1)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	6402.5	-	-	-	6402.5
Procurement	9279.4	-	-	-	9279.4
MILCON	227.2	-	-	-	227.2
O&M	-	-	-	-	-
Total	15909.1	-	-	-	15909.1

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1983				1789.1	1912.6	1911.3	1910.9	4.9
1984				1766.5	1962.6	1928.5	1925.2	3.8
1985				1324.4	1520.4	1499.5	1474.4	3.4
1986				568.7	668.8	663.1	639.2	2.8
1987				205.1	252.3	244.2	198.6	2.7
1988				27.3	34.7	34.0	33.0	2.9
1989				22.6	29.6	29.6	27.8	4.2
1990				7.5	10.2	10.2	10.2	4.0
1991				5.3	7.5	7.5	5.1	4.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1992				2.0	2.9	2.7	1.2	2.8
1993				0.6	0.9	0.3	0.2	2.4
1994								2.4
Subtot				5719.1	6402.5	6330.9	6225.8	

Obligations and expenditures reflect program office records as of 31 March 1993.

Appropriation: 3020 Missile Procurement, Air Force

1984	21	222.5	987.5	1718.6	2143.1	2045.1	2010.1	8.0
1985	21	7.8	748.8	1871.5	2399.3	2240.2	2056.3	3.4
1986	12		565.8	754.5	1012.5	904.9	873.4	2.8
1987	12		527.0	758.3	1061.6	983.7	927.2	2.7
1988	12		536.9	595.6	867.2	856.8	830.6	3.0
1989	12		459.0	500.0	757.5	735.2	671.6	4.2
1990	12		370.5	392.2	604.7	595.3	456.4	4.0
1991			52.7	180.4	286.0	191.8	121.8	4.3
1992				75.1	120.4	89.7	69.6	2.8
1993				16.5	27.1	12.3	10.2	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
Subtot	102	230.3	4248.2	6862.7	9279.4	8655.0	8027.2	

Obligations and expenditures reflect program office records as of 31 March 1993.

Recurring flyaway cost shown in FY91 are for closing-out the AVE contracts which ended with FY90.

Appropriation: 3300 Military Construction, Air Force								
1983				15.0	16.7	12.1	12.1	4.9
1984				27.1	31.2	27.5	27.5	3.8
1985				81.4	95.7	62.6	62.5	3.4
1986				43.9	53.1	33.2	33.2	2.8
1987				20.7	25.9	22.3	22.3	2.7
1988				3.5	4.6	4.6	4.6	2.9
Subtot				191.6	227.2	162.3	162.2	
Grand Total	102	230.3	4248.2	12773.4	15909.1	15148.2	14415.2	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Full rate production quantity was 12 missiles per year there were no buys after FY1990.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

Note: FY90 was the last buy year.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	20/20
Procurement	91/91

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

1. Program is 102 missiles (50 deployed, 15 A&S, 37 FOT&E).

2. The O&S period commences with Oct 91 and continues through Sep 99.

3. Military Construction costs are not included.

4. All O&S costs are in BY82$M (Inflation indices AFR 173-13, Jan 92).

18a. (U) Operating and Support Costs (Cont'd):

5. Estimate includes three (3) FOTGE test firings per year.

6. Depot Support data derived from Ogden Air Logistics Center (OO-ALC/LMCP).

7. The dollar figures reflected in section 18.b are based on the steady state cost per squadron. No entries are shown under the second column since Peacekeeper weapon system replaces 50 Minuteman III missiles, but does not replace the Minuteman system.

The concept of operation is a 50 Peacekeeper ICBM squadron on 24-hour alert. The personnel costs are the direct costs to support the primary personnel to operate, maintain, service, and secure the ICBM. The O&S consumables costs include POL and maintenance material costs. The depot maintenance cost is a summary cost which includes support costs. The sustaining investment consists primarily of replenishment spares, permanent modification kits and replacement for support equipment. The other direct costs category includes costs for sustaining engineering, operational firings and depot non-maintenance activities. The indirect costs are for base operating support (BOS), personnel permanent change of station, and acquisition and training of primary and support program personnel.

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Squadron	Antecedent
Personnel	13.4	N/A
O&S Consumables	2.3	N/A
Direct Depot Maintenance	9.3	N/A
Sustaining Investment	6.7	N/A
Other Direct Costs	48.9	N/A
Indirect	5.9	N/A
Total	86.5	N/A

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
OSM	54.8	24.1	19.5	---	98.4
Industrial Fund	3.2	1.4	1.5	---	6.1
Total	58.0	25.5	21.0	---	104.5

Data extracted from current OP-18.

N-10 CV HELO

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[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CV HELO

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Aircraft Carrier Inner Zone Anti-Submarine Warfare Helicopte

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
Air ASW, Assault and Special Mission Programs (PMA-299)
Jefferson Plaza 1, Rm 720
WASHINGTON, DC 20361-1299

CAPT J. W. HADDOCK, III
Assigned: February 21, 1992
AV 286-1534 COMM 703-746-1534

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604219N Project H0485
PROCUREMENT:
APPN 1506 ICN 0183 (Navy)
MILCON:
PE 0204696N (Shared)

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MAY 25 1993

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. (U) Related Programs:
Army: UH-60A BLACK HAWK, EH-60A Quickfix.

Air Force: HH-60D NIGHT HAWK, MH-60G Pave Hawk, MH-60K Special Operations Helicopter.

Navy: SH-60B SEAHAWK, SH-60F Trainer, HH-60H Helicopter Combat Support Aircraft, Airborne Low Frequency Sonar (ALFS).

Coast Guard: HH-60J Medium Range Recovery Helicopter.

6. (U) Mission and Description:
The CV Inner Zone Anti-Submarine Warfare (ASW) Helicopter provides Aircraft Carrier Battle Groups (CVBG) with quick reaction Inner Zone ASW protection. The SH-60F will replace the existing SH-3H ASW helicopters which are becoming insufficient in number and capability to counter the submarine threat to the CVBG. Primary mission is Inner Zone ASW. Other missions which the SH-60F will perform are Anti-Air Warfare (chaff); Command, Control and Communications; Fleet Support Operations (including plane guard, MEDEVAC, and Search and Rescue); logistic support and surveillance. The SH-60F is equipped with the improved AQS-13F dipping sonar. All mission requirements are satisfied.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
From full and open competition held in FY 1984, Sikorsky Aircraft Division of United Technologies was selected as the prime contractor for the CV Inner Zone ASW Helo. A letter contract for development and options for five lots of production aircraft was signed on February 28, 1985. The firm fixed price contract for the development portion was definitized August 1986. The U.S. Navy accepted delivery of the first SH-60F aircraft in June 1987. Sikorsky demonstrated the entire avionics system and the AQS-13F integration in June 1987 (DT-IID). In October 1987, Naval Air Test Center (NATC) conducted ground and flight tests at NATC to evaluate the ability to meet technical thresholds and on the USS Theodore Roosevelt (CVN-70) to demonstrate CV compatibility (DT-IIE/Phase 1). NATC and Commander, Operational Test and Evaluation Force (COMOPTEVFOR) performed ground and flight test in November 1987. VX-1, the Navy's operational testing squadron, and NATC tested operational effectiveness and operational suitability of the SH-60F Weapons System on two fully integrated aircraft at Atlantic Underwater Test and Evaluation Center (AUTEC) (DT-IIE/Phase 2 and OT-IIB combined). Technical Evaluation (TECHEVAL) was completed in November 1987. In January 1988 OPEVAL (OT-IIC) was completed by COMOPTEVFOR aboard the USS Dwight D. Eisenhower (CVN-69). The Acquisition Decision Memorandum (ADM) granting full production was signed April 28, 1988. The Lot III option (18 aircraft) was definitized in September 1988. In October

7a. (U) Program Highlights (Cont'd):

1988, NATC completed DT-IIE/F which evaluated contractor corrective actions of aircraft and avionics deficiencies noted during prior DT/OT periods. Follow-On Test & Evaluation (FOT&E), OT-IIIA, was completed in March 1989. Initial Operating Capability was attained in September 1989. DT-IIG commenced in September 1989 to verify corrections to deficiencies from previous DT/OT periods and was successfully completed in March 1990. OT-IIIB was completed in June 1990. Favorable test results led to an ADM, dated 15 October 1990, that approved continued full rate production for the program. HS-10 accepted the operational flight trainer in July 1990 and the composite maintenance trainer in October 1990. HS-2 completed transition and pre-deployment training while HS-6 and HS-4 commenced transition training.

HS-2 deployed aboard USS NIMITZ, the first SH-60F deployment, from March to August 1991, HS-6 deployed aboard USS LINCOLN from June to November 1991 and HS-4 deployed aboard USS KITTY HAWK from October to December 1991. Both HS-2 and HS-6 employed the "6+2" concept, deploying with 6 SH-60F aircraft plus 2 HH-60H aircraft. HS-3, the first east coast squadron, completed training and reached IOC 27 August 1991 at NAS Jacksonville, FL.

DT-III (BIS Trials) were conducted from November 1990 to April 1991 with results showing major improvements in avionics tactical mission software, sonar and sonar cable hover, tactical data transfer and communications and the aircraft demonstrated excellent ASW mission capability.

b. (U) Significant Developments Since Last Report --
As of 31 December 1992, 65 aircraft have been delivered.

The SH-60F aircraft continued to enter the fleet during 1992. HS-8 and HS-15 completed transition from SH-3H to the SH-60F in May 92 and Nov 92 respectively. HS-1, the east coast fleet replacement squadron, commenced transition in Oct 92 with completion scheduled for early 1993. HS-4 deployed, employing 6 SH-60F aircraft plus 2 HH-60H concept, in Nov 92. Additionally, HS-2 and HS-3 were in the midst of predeployment training.

The SH-60F commenced DT-IIIA in Sep 92 at Naval Air Warfare Center, Aircraft Division, Patuxent River, MD, to test implementation of Revision A software.

This system will satisfy mission requirements.

7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently no breaches to the 21 February 1992 Acquisition Program Baseline and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
JMSNS	AUG 82	N/A	AUG 82
SECDEF Approved FY 84 New Start	AUG 82	N/A	AUG 82
Milestone I (DSARC)	JUN 83	N/A	JUN 83
SDDM Milestone I Approval	MAY 84	N/A	MAY 84
RFP Release	JUN 84	N/A	JUN 84
Proposals Received	AUG 84	N/A	AUG 84
Milestone II (DSARC)	JAN 85	N/A	JAN 85
SDDM Milestone II Approval	FEB 85	N/A	FEB 85
Contract Award for SH-60F	FEB 85	N/A	FEB 85
Award Lot I/II Long Lead Contract	JAN 86	N/A	JAN 86
Award Lot III Long Lead Contract	JAN 87	N/A	MAR 87
Operational Evaluation			
Start	NOV 87	NOV 87	NOV 87
End	DEC 87	JAN 88	JAN 88
Milestone III (DAB)	MAR 88	MAR 88	MAR 88
Initial Operating Capability (IOC)	SEP 89	SEP 89	SEP 89

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
DCP, "CV Inner Zone ASW Helicopter (SH-60F)", Rev 1, dated March 1, 1988.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 21 February 1992.

10. (U) **Performance Characteristics**:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

b)(1)

(b)(1)

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	59.5	178.6	174.2
Procurement	2606.4	3132.1	2566.7
Airframe	(1668.5)		(1638.1)
Engine	(156.4)		(125.0)
Avionics	(51.9)		(95.0)
Total Flyaway	(1876.8)		(1858.1)
Other Weapon System Cost	(555.4)		(557.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(174.2)		(150.9)
Construction (MILCON)	25.9	24.3	24.7
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	2691.8	3335.0	2765.6
Escalation	482.0	1026.6	565.1
Development (RDT&E)	(-4.2)	(24.1)	(20.5)
Procurement	(484.4)	(1000.8)	(542.7)
Construction (MILCON)	(1.8)	(1.7)	(1.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3173.8	4361.6	3330.7

b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	175	N/A	143
Total	175	N/A	143

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
DCP, "CV Inner Zone ASW Helicopter (SH-60F)", Rev 1, dated March 1, 1988.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 21 February 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3330.7	4020.1	3330.7
(2) Quantity	143	175	143
(3) Unit Cost	23.292	22.972	23.292
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	174.3	174.3	198.5
Less CY Adv Proc	29.8	29.8	36.6
Plus FY Adv Proc	56.4	56.4	48.6
Net Total	200.9	200.9	210.5
(2) Quantity	9	9	8
(3) Unit Cost	22.322	22.322	26.313

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	55.3	3090.8	27.7	3173.8
Previous Changes:				
Economic	-0.5	+103.5	-	+103.0
Quantity	-	-	-	-
Schedule	-	+106.0	-	+106.0
Engineering	+86.1	+135.0	-	+221.1
Estimating	+61.8	+143.5	+2.6	+207.9
Other	-	-	-	-
Support	-	+208.3	-	+208.3
Subtotal	+147.4	+696.3	+2.6	+846.3
Current Changes:				
Economic	-2.5	-123.6	-0.2	-126.3
Quantity	-	-456.6	-	-456.6
Schedule	-	-14.2	-	-14.2
Engineering	-	+30.3	-	+30.3
Estimating	-5.5	+82.1	-3.5	+73.1
Other	-	-	-	-
Support	-	-195.7	-	-195.7
Subtotal	-8.0	-677.7	-3.7	-689.4
Total Changes	+139.4	+18.6	-1.1	+156.9
Current Estimate	194.7	3109.4	26.6	3330.7

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	59.5	2606.4	25.9	2691.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+15.0	-	+15.0
Engineering	+71.7	+97.4	-	+169.1
Estimating	+47.5	+115.7	+1.6	+164.8
Other	-	-	-	-
Support	-	+116.8	-	+116.8
Subtotal	+119.2	+344.9	+1.6	+465.7
Current Changes:				
Quantity	-	-315.3	-	-315.3
Schedule	-	-4.4	-	-4.4
Engineering	-	+22.4	-	+22.4
Estimating	-4.5	+50.5	-2.8	+43.2
Other	-	-	-	-
Support	-	-137.8	-	-137.8
Subtotal	-4.5	-384.6	-2.8	-391.9
Total Changes	+114.7	-39.7	-1.2	+73.8
Current Estimate	174.2	2566.7	24.7	2765.6

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Engineering: Development and integration of the Airborne Low Frequency Sonar (ALFS).
Estimating: Revised cost estimates for aircraft testing; revised cost estimates for development of ALFS, UYS-2 cost growth, cost realism and additional risk reduction measures.

Procurement
Economic: Revised escalation indices.
Schedule: Revised procurement schedule.
Engineering: Incorporation of HEELS, GPS, Sonobuoy Launcher and

13b. (U) Cost Variance Analysis (Cont'd):

FIR; incorporation of Standard Attitude Heading & Reference System (SAHRS), E-1 Harness, Solid Shaft Battery Disconnect; sonar improvement and night vision goggles ECP's and additional engineering costs associated with ALFS..

Estimating: Increase in flyaway costs in FY-88 thru FY-90 without increase in total contract NTE; increase in negotiated overhead rates of major contractor; loss of cost savings due to loss of business base of contractor programs; extended delivery period for FY93 buy; refinement of cost estimates/learning curves based on actuals and contract definitizations, fluctuations due to multi-model contracts and Army Blackhawk program.

Support: Decrease in support areas in FY-88 thru FY-90 contract NTEs; increased costs due to delay in procurement of support items and increased funding for existing spares requirements; addition of support costs for ALFS, addition of support costs for additional trainers to support HH-60H on mission training requirements.

MILCON

Estimating: Engine Maintenance Facility (P-138) not funded; addition of two previously unfunded projects, Engine Maintenance Facility (P-158) and Aircraft Hangar Improvements (P-602).

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Changes in esclation indices. (Economic)	N/A	-2.5
Reduction of planned integration effort of ALFS into the SH-60F airframe. (Estimating)	-4.5	-5.5
RDT&E Subtotal	-4.5	-8.0
(2) Procurement		
Revised escalation rates. (Economic)	N/A	-123.6

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Total quantity reduced from 175 to 143. Procurement objective for aircraft reduced from 175 to 150. SH-60F aircraft procurements reduced by 3 a/c in FY93 and 4 a/c in FY94. (Quantity)	-315.3	-456.6
Schedule changes applicable to 32 aircraft since baseline. (Schedule)	-2.8	-17.1
Engineering changes applicable to 32 aircraft since baseline. (Engineering)	-18.3	-21.8
Estimating changes applicable to 32 aircraft since baseline. (Estimating)	-21.7	-23.2
Realignment of outyear procurement profile. (Schedule)	-1.6	+2.9
Added ECP's for SLAP; RH Extended Pylon; NVG; GPS Mar Comp; and Cockpit Improvement. (Engineering)	+40.7	+52.1
CV Helo cost adjustments due to procurement qty streams revised in SH-60B, HH-60H and HH-60J aircraft, changes in prime contractor labor and overhead rates. (Estimating)	+66.9	+93.7
Reductions in support funding. (Support)	-142.0	-195.7
Corrections to previous SAR report variance categorizations. (Support)	+4.2	--
Corrections to previous SAR report variance categorizations. (Estimating)	-4.2	--
Adjustment for current and prior year inflation. (Estimating)	+9.5	+11.6
Procurement Subtotal	-384.6	-677.7
(3) MILCON		
Changes in inflation indices. (Economic)	N/A	-0.2
Deletion of planned MILCON projects in outyears. (Estimating)	-2.8	-3.5
MILCON Subtotal	-2.8	-3.7

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
17.578	-0.170	--	--	--	-0.518	--	1.246	0.558	18.136

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.136	-0.163	0.866	0.642	1.758	1.965	--	0.088	5.156	23.292

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) CV HELO (SH-60F) LOT VI:	Initial Contract Price		
	Target	Ceiling	Qty
UNITED TECHNOLGIES CORP., STRATFORD, CT N00019-89-C-0153, FFP Award: June 29, 1990 Definitized: January 24, 1992	$161.3	N/A	12

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$161.3	N/A	12	$161.3	$161.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 62.5% (10 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 56.2% ($1871.9 / $3330.7)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY84-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	135.9	25.7	17.6	15.5	194.7
Procurement	1710.0	198.5	296.5	904.4	3109.4
MILCON	26.0	0.6	-	-	26.6
O&M	-	-	-	-	-
Total	1871.9	224.8	314.1	919.9	3330.7

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1984				20.2	18.3	18.3	18.3	3.8
1985				20.3	19.0	19.0	19.0	3.4
1986				12.1	11.6	11.5	10.6	2.8
1987				6.9	6.8	6.8	5.9	2.7
1988								3.0
1989								4.2
1990				9.1	10.1	10.0	8.8	4.0
1991				10.4	12.0	11.9	9.3	4.3
1992				16.5	19.5	19.5	12.8	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1993				32.0	38.6	16.4	1.0	2.4
1994				20.8	25.7			2.4
1995				13.9	17.6			2.3
1996				12.0	15.5			2.3
Subtot				174.2	194.7	113.4	85.7	
Appropriation: 1506 Aircraft Procurement, Navy								
1986				30.8	30.5	30.5	30.0	2.8
1987	7	18.6	135.3	159.1	163.0	163.0	151.2	2.7
1988	18	4.2	212.4	311.0	332.5	332.5	320.2	3.0
1989	18	1.9	206.3	330.9	367.9	367.9	356.5	4.2
1990				94.0	108.1	108.1	85.8	4.0
1991	18	1.5	233.1	235.6	278.8	264.7	197.7	4.3
1992	12	4.8	141.0	210.3	254.9	226.5	94.4	2.8
1993	9	14.0	100.2	140.5	174.3	37.8	0.9	2.4
1994	8	1.8	99.4	156.5	198.5			2.4
1995	12		167.9	228.6	296.5			2.3
1996	17	2.7	220.0	256.1	339.6			2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
1997	17	15.9	194.5	269.0	364.5			2.2
1998	7		82.6	127.1	176.0			2.2
1999				17.2	24.3			2.2
2000								2.2
2001								2.2
2002								2.2
Subtot	143	65.4	1792.7	2566.7	3109.4	1531.0	1236.7	
Appropriation: 1205 Military Construction, Navy								
1988				16.2	17.2	17.2	16.5	3.0
1989				8.0	8.8	8.8	7.8	4.2
1990								4.0
1991								4.3
1992								2.8
1993								2.4
1994				0.5	0.6			2.4
1995								2.3
Subtot				24.7	26.6	26.0	24.3	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1205 Military Construction, Navy (Cont'd)								
Grand Total	143	65.4	1792.7	2765.6	3330.7	1670.4	1346.7	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

A Defense Review Board (DRB) decision set the maximum SH-60B and SH-60F combined procurement quantity at 24 aircraft per year.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	125.6	198.5	409.6	-72.9	+211.1
Procurement Qty	7	8	28	-1	+20
Proc. Unit Cost	17.943	24.813	14.629	-6.870	-10.184
FY 1995					
Procurement Cost	130.1	296.5	421.2	-166.4	+124.7
Procurement Qty	7	12	28	-5	+16
Proc. Unit Cost	18.586	24.708	15.043	-6.122	-9.665
Balance of Proc. (FY 1996 to Complete)	1408.4	904.4	1064.8	+504.0	+160.4

Minimum sustaining based on procurement profile of 7 SH-60B's, 7 SH-60F's and 4 HH-60H's. Maximum economic based on procurement profile of 28 SH-60B's, 28 SH-60F's and 4 HH-60H's.

Costs for minimum sustaining and maximum economic represent recurring

17b. (U) Production Rate Data (Cont'd):
flyaway only, whereas current estimate includes non-recurring, support costs, advances, advance credits and spares.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	64/65

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Assumptions:

	SH-60F	SH-3H
Flight hours per aircraft per month	46.9	40.0
Number of aircraft per squadron	6 *	6
Consumption rate, gals per hour	146.0	148.4
POL cost, JP-5, per barrel, FY 88$	27.72	27.72

* Current planning is to deploy 2 HH-60H aircraft with a 6 aircraft SH-60F squadron. Costs for all eight aircraft are included in this estimate.

The maintenance concept for both the SH-60F and the antecedent system is for organic support at all three levels of maintenance. Estimates for the SH-60F avionics assume a 50% increase in the reliability of the AQS-13F over the AQS-13E onboard the SH-3H.

Personnel costs are for all people assigned to the squadron required to operate and maintain the aircraft according to the Preliminary Squadron Manning Document of September 1987 and are prepared using the Billet Cost Model. This cost also includes the cost of administrative and staff personnel required for the operational control of the squadron. The O&S consumable cost is for fuel, training expendables and other consumables used in the direct support of the weapons system. Direct depot maintenance contains the cost of Scheduled Depot Level Maintenance (SDLM), engine repair/rework and components repair. The sustaining investment cost is for replenishment spares, support equipment maintenance, simulator maintenance, trainer maintenance and software support. Indirect costs are for base operating and health support personnel and the materials required by these two groups.

Assumptions and ground rules for the SH-60F and the SH-3H are the same unless otherwise annotated.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SH-60F Squadron	Avg Annual Cost Per SH-3H Squadron
Personnel	9.2	7.7
O&S Consumables	2.1	1.5
Direct Depot Maintenance	2.9	2.1
Sustaining Investment	1.2	0.5
Indirect Costs	0.5	0.4
Total	15.9	12.2

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
NIF	1.0	0.1	---	---	1.1
OM,N	12.3	1.0	---	---	13.3
Total	13.3	1.1	---	---	14.4

Narrative Explanation:
Interim Contractor Support (O&M,N) - FY1993 decrease due to transfer to APN.
Sustaining Engineering (O&M,N) - FY 1993 Decrease - Leveling of support for maintenance performance tracking and validation of software trouble report corrections.
Sustaining Engineering (DBOF) - Technical training support.
Contractor Logistics Support (O&M,N) - FY 1994 Decrease - Visual upgrade systems transferring to fleet.
Other:
CETS (O&M,N) - Realignment to organic NETS.
CETS (DBOF) - Technical training on avionics and trainer equipment.

A-27 SINCGARS

92-056

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SINCGARS

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
Single Channel Ground and Airborne Radio System (SINCGARS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PROJECT MANAGER, SINCGARS
PEO COMMUNICATIONS
ATTN: SFAE-CM-GAR
FORT MONMOUTH, NJ 07703-5005
COL,SC ROBERT W. CAMPBELL
Assigned: December 21, 1990
AV 995-3063 COMM (908) 544-3063

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DEPARTMENT OF DEFENSE
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25 MAY 1993
SECURITY REVIEW, DECSINT, HQDA

4. Program Elements/Procurement Line Items:

RDT&E:
PE 63746 (Shared) Project D555 (Shared)
PE 64805 Project D282

93-686

4. Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 0350 ICN 324000 (DCA/DNA)
APPN 1109 ICN 043638 (Navy) (Shared)
APPN 1810 ICN 068342 (Navy) (Shared)
APPN 1810 ICN 068892 (Navy) (Shared)
APPN 1810 ICN 24163N (Navy) (Shared)
APPN 2031 ICN AA0974 (Army) (Shared)
APPN 2031 ICN AZ3500 (Army)
APPN 2035 ICN B00500 (Army)
APPN 2035 ICN B00508 (Army)
APPN 2035 ICN B45500 (Army) (Shared)
APPN 2035 ICN BA9102 (Army) (Shared)
APPN 2035 ICN BA9520 (Army) (Shared)
APPN 2035 ICN BW0006 (Army)
APPN 2035 ICN J30500 (Army)
APPN 2035 ICN T99500 (Army) (Shared)
APPN 2035 ICN Z16800 (Army)
APPN 3080 ICN 27423F (Air Force) (Shared)

5. Related Programs:
None

6. Mission and Description:
SINCGARS is a new family of VHF-FM combat net radios which provides the primary means of command and control for Infantry, Armor and Artillery Units. The SINCGARS system is designed on a modular basis to achieve maximum commonality among the various ground and airborne system configurations. A common receiver-transmitter (RT) is used in the manpack and all vehicular configurations. The SINCGARS family of radios has the capability to transmit and receive voice, tactical data and record traffic messages and is consistent with NATO interoperability requirements. The system will operate on any of the 2320 channels between 30-88 Megahertz and is designed to survive in a nuclear environment. Communication Security (COMSEC) for the basic radio is provided by use of the VINSON device. An Integrated COMSEC (ICOM) version of the SINCGARS is currently in production. The SINCGARS system will be operable in a hostile environment through use of electronic counter-counter measures (ECCM). SINCGARS will replace the currently standard manpack and vehicular radios, the AN/PRC-77 and the AN/VRC-12 family, respectively. An airborne version of the SINCGARS radio is in production and will replace the currently standard aircraft radios, the AN/ARC-114 and AN/ARC-131.

7. Program Highlights:
a. Significant Historical Developments --
DA approved the SINCGARS ROC in Dec 74. In Jun 77, the VCSA direction resulted in a decision to proceed from Advanced Development

7a. Program Highlights (Cont'd):

(AD) directly into production. The SINCGARS ground radio production hardware was type classified standard at ASARC III in Sep 83. A single year production contract was awarded in Dec 83, Option 1 in Nov 84, Option 2 in May 85, Option 3 in Jun 89, and Option 4 in Dec 90 to ITT Aerospace/Communication Div (formerly Aerospace/Optical Div) Ft. Wayne, IN. A follow-on sole-source contract was awarded to ITT in Mar 92. The initial SINCGARS airborne production contract was awarded to ITT in May 85, Option 1 in April 88, Option 2 in April 89, and Option 3 in Jan 91. The alternative source strategy was approved and documented in a February 87 Secretary of Defense Decision Memorandum (SDDM) to independently select and manage a second source which would be form, fit, function equivalent to ITT A/CD Integrated COMSEC (ICOM) SINCGARS at the Line Replaceable Unit (LRU) level. Award of the second source ground production contract was made to General Dynamics (GD) in Jul 88 with Option 1 awarded in Mar 91, and Option 2 awarded in Nov 92. Deliveries of ICOM radios were capped by the Defense Acquistion Executive (DAE) memo of Jun 89 until the completion of ITT Initial Operational Test & Evaluation (IOT&E). ITT ground and airborne contracts were modified in Mar 90 to reflect the low rate delivery schedules. The tests resulted in DOTE certification that the ITT ground and airborne radios were operationally effective and suitable. A Milestone IIIB DAB held in Dec 90 approved full-rate production for the ITT ground and airborne radios and continuation of low-rate production for GD radios. A program decision was made to postpone the GD IOT&E to permit hardware retrofit to improve reliability. A sole-source single year plus one option contract was awarded to ITT in Mar 92 to align with GD for head-to-head competition planned to commence in FY94. A successful Confidence Verification Experiment (CVEX) was conducted on the GD radio concluding in Jun 92.

b. Significant Developments Since Last Report --
Phase I of the GD IOT&E was successfully completed in Oct 92 resulting in approval to award Option 2 in Nov 92 as continued low-rate production. A revised program baseline was submitted and approved reflecting the continued low-rate production strategy. The full-rate decision and subsequent award is currently scheduled to occur in Jul 93.

The SINCGARS system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
Phase II of the GD IOT&E was successfully completed in Feb 93. Unofficial preliminary results appear very positive. Official results will be released by OEC and presented at the Defense Acquisition Board review in Jul 92.

8. Threshold Breaches:
There are no DAE Approved Acquisition Program Baseline (dated 15 April 1993) breaches. There are no current Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Milestone 0 (ROC Approval)	DEC 74	N/A	DEC 74
ASARC I	OCT 75	N/A	OCT 75
Milestone I (DSARC I)	FEB 76	N/A	FEB 76
Award AD Contracts	APR 78	N/A	APR 78
Milestone IIIA	SEP 83	SEP 83	SEP 83
Complete DT/OT -- I/II	DEC 83	N/A	DEC 83
Complete Limited DT/OT	DEC 82	N/A	DEC 82
Complete Maturity DT/OT	DEC 83	N/A	DEC 83
Initial Ground (ITT) Production Contract Award	DEC 83	DEC 83	DEC 83
Initial Airborne Production Contract Award	N/A	MAY 85	MAY 85
JRMB - Level Program Review	N/A	DEC 86	DEC 86
Ground (ITT) FAT Complete	JUN 85	JAN 88	JAN 88
Ground (ITT) Production Delivery Begins	AUG 85	JAN 88	JAN 88
Airborne Option I Award	N/A	APR 88	APR 88
Ground (ITT) Option I Delivery Begins	N/A	MAY 88	MAY 88
Initial Ground (GD) Award	N/A	JUL 88	JUL 88
Airborne FAT Complete	N/A	SEP 88	SEP 88
Airborne Production Delivery Begins	N/A	NOV 88	NOV 88
ICOM EUT&E	N/A	NOV 88	NOV 88
Milestone IIIB -- ITT Full Rate Production (Non-ICOM)	N/A	MAR 89	MAR 89
Airborne Option 2 Award	N/A	APR 89	APR 89
Ground (ITT) Option 3 Award	N/A	JUN 89	JUN 89
Ground (ITT) Option 2 Delivery Begins	N/A	JUN 89	JUN 89
Airborne Option 1 Delivery Begins	N/A	AUG 89	AUG 89
Airborne Option 2 Delivery Begins	N/A	APR 90	APR 90
ICOM IOT&E (ITT)	N/A	JUN 90	JUN 90
Ground (ITT) Option 3 Delivery Begins	N/A	JUL 90	JUL 90
Milestone IIIB -- ITT Full Rate (ICOM) and GD Low Rate Option I	N/A	DEC 90	DEC 90
Ground (ITT) Option 4 Award	N/A	DEC 90	DEC 90
IOC (1st Div Equipped)	OCT 87	DEC 90	DEC 90

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Airborne Option 3 Award	N/A	DEC 90	JAN 91
Ground (GD) Option 1 Award	N/A	DEC 90	MAR 91
Ground (GD) FAT Complete	N/A	DEC 91	JUN 92
Airborne Option 3 Delivery Begins	N/A	JAN 92	JAN 92
Ground (ITT) Option 4 Delivery Begins	N/A	JAN 92	JAN 92
Ground (GD) Production Delivery Begins	N/A	FEB 92	JUL 92
Ground (GD) Option 2 Award	N/A	JUN 92	NOV 92(Ch-1)
Ground (GD) Option 1 Delivery Begins	N/A	DEC 92	DEC 92
ICOM IOT&E (GD)	N/A	FEB 93	FEB 93
Second Source (GD) Full Rate Production Program Review	N/A	JUN 93	JUN 93
Ground (GD) Option 3 Award	N/A	JUN 93	JUN 93
Ground (GD) Option 2 Delivery Begins	N/A	NOV 93	NOV 93
Ground (GD) Option 3 Delivery Begins	N/A	OCT 94	OCT 94

b. Previous Change Explanations --

Late start of ITT First Article Test (FAT) plus problems encountered during the first phase of testing indicated that previous estimates of FAT completion and start of Production Delivery would not be met. FAT completion, First Production Deliveries, Third Option award and IOC were revised in accordance with the schedule presented at the Dec 86 Joint Requirements and Management Board (JRMB) (program review). As a result of the contract rebaselining modification signed in Nov 87, hardware delivery schedules were revised causing the IOC to be rescheduled from Dec 89 to Dec 90. ITT ICOM IOT&E was rescheduled as a result of the Jun 89 memo which capped deliveries of ICOM RT's at 730 per month until completion of additional operational testing. A Milestone IIIC (Follow-on Competition) review was changed to a Milestone IIIB (GD Full-rate) review. Ground radio (GD) option award and delivery milestones were rescheduled to reflect the then current Army plan rather that option expiration dates. A required Follow-on Experiment (FOEX) on the ITT radio completed in Oct 90 required additional time for reporting and certification causing the rescheduling of the Milestone IIIB (ITT) Full-rate (ICOM) from Sep 90 to Dec 90. Development of a new COMSEC chip for the GD radio and delays in the completion of contractor testing in preparation for First Article Test resulted in the rescheduling of all subsequent GD schedule milestones. Changes in the GD milestones were also attributable to the decision to defer the planned Option 1 award from Dec 90 to Mar 91 to allow the government time to investigate alleged contract administration issues which had been raised by the

9b. Schedule (Cont'd):
contractor. ITT Airborne Option 3 award was delayed from Nov 90 to Jan 91 due to the requirement for extended negotiations as the result of the government's decision to reduce the scope of work. Reliability problems and delay in delivery of test hardware resulted in a program decision to postpone start of GD's IOT&E from May 91 to Jan 92. GD FAT Complete schedule was revised from Mar 92 to Jun 92 to permit additional Production Reliability Acceptance Testing (PRAT). Resulting from the requirement to conduct a Confidence Verification Experiment on the GD radio, the ICOM IOT&E (formerly FOTE) (GD) schedule was revised from Jan 92 to Feb 93. All related subsequent GD schedule milestones were revised.

c. Current Change Explanations --

(Ch-1) Ground GD Option 2 Award occurred in Nov 92 from Dec 92, following successful completion of IOT&E Phase I.

d. References --

Production Estimate:
Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

Approved Program:
DAE Approved Acquisition Program Baseline dated 15 April 1993.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Frequency Band (MHz)	30 - 87.975	30 - 87.975	/ 30 - 87.975	30 - 87.975	30 - 87.975
Number of Channels	2320	2320	/ 2320	2320	2320
Channel Spacing (KHz)	25	25	/ 25	25	25
Weight (Manpack + ICOM (lbs))	22.5	22.5	/ 22.5	18.8	22.5
Power Requirements (Vdc)	28	28	/ 28	28	28
Communications Range: (KM) (Voice & Analog Data)					
Manpack (above 40 MHz)	8	8	/ 8	8	8
Vehicular	35	35	/ 35	35	35

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Airborne (@ 1000 ft) (Data @ 16 Kbps @ 10^-3 Ber)	N/A	35	/ 35	60	35
Manpack (above 40 MHz)	4.5	4	/ 4	4	4
Vehicular	17.5	17	/ 17	27	17
Mean Time Between Failure Operational Environment (MTBFOE) (Hrs)					
Ground					
Non-ICOM (less ECCM, DRA)	N/A	1250	/ 1250	7588	1250
ICOM	N/A	1250	/ 1250	8382	1250
Airborne	750	750	/ 750	7345	750
ECCM (Hrs)	3500	N/A	/ N/A	8382	3500
Mean Time To Repair (MTTR)(Min)					
Organizational Level	15	15	/ 15	2.9	15
Direct Support (DS)					
Non-ICOM	N/A	60	/ 60	52.2	45/60
ICOM	N/A	45	/ 45	16	45
General Support (GS) (Hrs)	2	N/A	/ N/A	1.78	2

PERFORMANCE CHARACTERISTICS AS DISPLAYED ARE SUBJECT TO THE FOLLOWING CONDITIONS:

a. Data for specified performance characteristics demonstrated performance on production models is available from First Article Test and Follow-on Evaluations including operational testing.

b. Performance characteristic parameters are point values not ranges.

c. Measurement conditions for Communications Range, rolling plains, antenna not buried in foliage, average ground, 25% circuit reliability, environmental noise of 17db @ 50 MHz.

d. Since Manpack and Vehicular have the same value for MTBF, they have been combined and designated as Ground.

e. The SINCGARS reliability requirement as approved in 1974 has no MTBF requirement or DCP threshold. This means that only radio hardware failures are counted, but under field test rather than in a lab. Demonstrated performance results are expressed on a point

10a. Performance Characteristics (Cont'd):
estimate basis on the AN/VRC-90 or 1477A airborne R/T system basis.
f. Direct support Mean Time to Repair (MTTR) is not a cumulative requirement and does not include Organizational Level MTTR.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

Approved Program:
DAE Approved Acquisition Program Baseline dated 15 April 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	154.4	207.5	208.5
Procurement	4013.3	2790.0	2927.7
Major System Equipment	(3151.8)		(2646.2)
Ancillary Equipment	(431.8)		(131.6)
Total Flyaway	(3583.6)		(2777.8)
Total Other Weapon Systems	(25.9)		(122.9)
Marine Corps Other Weapon Sys			(0.0)
Total Other Wpn Sys	(25.9)		(122.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(403.8)		(27.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	4167.7	2997.5	3136.2
Escalation	1444.0	1288.9	1186.4
Development (RDT&E)	(-19.0)	(1.7)	(0.9)
Procurement	(1463.0)	(1287.2)	(1185.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	5611.7	4286.4	4322.6

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	0	0
Procurement	292853	256148	246845
Total	292853	256148	246845

Note: Excludes 123 RDTE prototypes from the SAR Baseline and 123 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs --

Recipient Country	Case ID	Quantity	Estimated Cost
Bahrain	BA-BJAT-JAH	73	1.5M
Finland	FI-B-UBG	6	.1M
Saudi Arabia	SI-B-JBP	3,370	70.1M
SDAF	N/A	318	6.7M
Spain	SP-LDE	4	.1M

* Estimated cost includes Total Package Fielding services/supplies)

d. Nuclear Costs -- None.

e. References --

Production Estimate:
Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

Approved Program:
DAE Approved Acquisition Program Baseline dated 15 April 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TYS)	4322.6	3121.8	4322.6
(2) Quantity	246845	150000	246845
(3) Unit Cost	0.018	0.021	0.018

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TYS)	322.5	322.5	414.2
Less CY Adv Proc	0.0	0.0	0.0
Plus FY Adv Proc	0.0	0.0	0.0
Net Total	322.5	322.5	414.2
(2) Quantity	22305	22305	25283
(3) Unit Cost	0.014	0.014	0.016

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	135.4	5476.3	0.0	5611.7
Previous Changes:				
Economic	-0.1	+150.9	-	+150.8
Quantity	+11.6	-2669.4	-	-2657.8
Schedule	+2.2	+718.1	-	+720.3
Engineering	+16.3	-	-	+16.3
Estimating	+13.9	-355.4	-	-341.5
Other	-	-	-	-
Support	-	-378.0	-	-378.0
Subtotal	+43.9	-2533.8	-	-2489.9
Current Changes:				
Economic	-0.1	-158.4	-	-158.5
Quantity	-	+1564.8	-	+1564.8
Schedule	-	-2.4	-	-2.4
Engineering	+30.1	-	-	+30.1
Estimating	+0.1	-237.9	-	-237.8
Other	-	-	-	-
Support	-	+4.6	-	+4.6
Subtotal	+30.1	+1170.7	-	+1200.8
Total Changes	+74.0	-1363.1	-	-1289.1
Current Estimate	209.4	4113.2	-	4322.6

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	154.4	4013.3	0.0	4167.7
Previous Changes:				
Quantity	+9.7	-1567.0	-	-1557.3
Schedule	-	+43.9	-	+43.9
Engineering	+13.8	-	-	+13.8
Estimating	+9.3	-110.7	-	-101.4
Other	-	-	-	-
Support	-	-286.1	-	-286.1
Subtotal	+32.8	-1919.9	-	-1887.1
Current Changes:				
Quantity	-	+1021.2	-	+1021.2
Schedule	-	-	-	-
Engineering	+21.2	-	-	+21.2
Estimating	+0.1	-193.2	-	-193.1
Other	-	-	-	-
Support	-	+6.3	-	+6.3
Subtotal	+21.3	+834.3	-	+855.6
Total Changes	+54.1	-1085.6	-	-1031.5
Current Estimate	208.5	2927.7	-	3136.2

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indicies.

Quantity: Addition of 45 prototypes for Integrated COMSEC (ICOM).

Schedule: Effort rescheduled to later years due to funding shortfall.

Engineering: Redesign radio and COMSEC device for Integrated COMSEC. Increased scope of work for P3I effort.

Estimating: Reduction in FY 86 and FY 87 Program Budget Guidance for engineering development effort. Revised estimate for ICOM effort and Installation Kit (IK) development. Adjustment of prior year amounts to actuals. Increased effort for IK and

13b. Cost Variance Analysis (Cont'd):

Second Source Test Program Set (TPS) development. Additional effort for product improvement studies and SINCGARS Remote Control Unit (SRCU) development. Revised estimate for P3I cost studies. Removal of out year funding designated for SINCGARS follow-on system. Elimination of anticipated product improvement cost reduction tasks. Current and prior year inflation offset.

Procurement

Economic: Revised escalation indicies.

Quantity: Reduced requirement for airborne radios. Additional radios required due to redefinition of force structure. Reduced ground and airborne radio requirements resulting from Quick Silver.

Schedule: Stretch-out in procurement adjusted to available funding and problems encountered in FAT. Reduced costs in then-year dollars resulting from shortened schedule due to increased annual quantities. ICOM deliveries capped pending completion of additional operational testing. Additional costs to revise and extend contract delivery schedules and to reschedule balance of program. Reduction due to elimination of six years of procurement schedule.

Estimating: Revised estimates for warranty, COMSEC module, installation kits, Battlefield Electronic Communications Systems (BECS), XGV-10, and revised cost-quantity relationship. Additional requirement for XGV-10's and BECS Electronic Notebook, OE-254 antennas, and tooling based on increased annual quantities. Revised estimate for airborne radio ICOM production. Revised average unit cost of Army ground radios based on including other service quantities in learning curve calculations. Reduced estimate for warranty based on WARM model and AMC warranty guidance. Reduced hardware cost resulting from applying learning curve through end of production instead of stopping learning after a specified quantity. Adjustment in FY 88-89 budget resulting in change to FY98. Revised estimate for ground radio production based on prices in second source contract. Reduced requirement for SINCGARS Remote Control Unit (SRCU). Reduced requirement for the Battlefield Electronics Communications Electronics Operating Instructions (CEOI) System due to revised distribution plan. Revised estimate for ground radio based on revised procurement mix of ITT and GD radios. Estimating changes

13b. Cost Variance Analysis (Cont'd):

applicable to ground and airborne radio quantity elimination. Increased estimate for BECS Basic Generator Unit (BGU) based on change in anticipated Non-Developmental Item (NDI) hardware. Additional requirement for installation kits for POMCUS. Increased estimate for General Dynamics ground radio based on extrapolation of contract cost data. Increased estimate for Remote Control Unit based on contractor proposal data. Increased estimate for airborne radio maintenance group, OA-9264 based on actual data. Revised estimate resulting from the elimination of BECS Electronic Notebook and Basic Generator Unit Interface efforts. Adjustment to prior year (FY83-90) procurement program to actual dollars. Redistribution of FY92 Army quantity from Source 1 to Source 2. Budgetary adjustments for primary hardware. Current and prior year inflation offset.

Support: Reduced requirement for radio spares, reclassification of initial spares from procurement to Army Stock Fund, elimination of spares requirement for XGV-10 and reduced estimate for data. Reduced estimate for initial spares based on requirement identified by SESAME model and reduced hardware cost. Revised estimate for initial spares based on increased cost for spares components. Reduced quantity for initial spares due to reduced end-item requirement. Increased estimate for ground radio initial spares based on revised methodology (cost per operating hour). Addition of costs for Total Package Fielding (TPF) and New Equipment Training (NET) now reportable in SAR. Addition of costs for Project Management Office salaries, Contractor Field Service Representatives, and Information Management. Budgetary adjustments for ISRP and other weapons system.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.1

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Additional effort for evolutionary enhancements to the SINCGARS radio. (Engineering)	+21.2	+30.1
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+21.3	+30.1
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-93.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	-65.0
Increase of 96,845 units due to first-time inclusion of other service buys and increase in Army quantity to fill Force Package 3 requirements.	+933.4	+1439.6
Army National Guard and Army Reserves requirements of 7,460 ground and 54 airborne radios. (Quantity)	+104.7	+144.0
Marine Corps requirement of 27,855 ground radios. (Quantity)	+351.8	+479.5
Navy requirement of 3,109 ground radios and 120 airborne radios. (Quantity)	+47.6	+64.2
Air Force requirement of 2,680 ground radios. (Quantity)	+35.5	+49.5
Increase of 55,486 Army ground radios to fill Force Package 3 requirements. (Quantity)	+481.6	+827.6
Increased requirement for spares to support additional Army quantity. (Support)	+14.2	+21.1
Increased requirement for Total Pack Fielding associated with additional quantity. (Support)	+17.7	+20.9
Estimating Variance resulting from Quantity Allocation. (Estimating)	-119.7	-167.2
Change in procurement buy schedule. (Schedule)	--	-2.4

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Revised methodology for estimating hardware manufacturing costs based on analysis of contractor labor, material buys, overheads, etc. (Estimating)	-84.5	-85.7
Adjustment for Current & Prior Inflation. (Estimating)	+10.5	+14.3
Adjustment for Current & Prior Inflation. (Support)	+0.5	+0.7
Revised estimate for Initial Spares based on analysis of actual requirements to date. (Support)	-25.6	-37.4
Correction to previous change which was reported in the wrong category. Correction to Dec 1991 SAR:	--	--
(Support)	-0.5	-0.7
(Estimating)	+0.5	+0.7
Procurement Subtotal	+834.3	+1170.7

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.019	--	--	0.003	--	-0.002	--	-0.002	-0.001	0.018

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

SINCGARS GROUND PROD:	Initial Contract Price Target	Ceiling	Qty
ITT CORPORATION, FORT WAYNE, IN DAAB07-84-C-K503, FFP Award: December 2, 1983 Definitized: December 2, 1983	$53.8	N/A	650

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$789.7	N/A	44100	$757.2	$798.5

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$	$
Net Change	$0.0	$0.0

Explanation of Change:

The target price increase from the September 1992 SAR value of $789.2M is due to the incorporation of modifications for product improvement engineering change orders. The Program Manager's estimated price at completion includes reliability award fees yet to be earned that are not reflected in the Contractor's EAC as well as modifications awarded since submission of the Contractor's EAC in May 92.

Contract DAAB07-91-C-G001 was awarded December 1990 as an administrative continuation of contract DAAB07-84-C-K503. This display combines DAAB07-84-C-K503 and DAAB07-91-C-G001 data.

Cost and schedule variance reporting not required for this FFP contract.

	Initial Contract Price		
SINCGARS A/B PROD:	Target	Ceiling	Qty
ITT CORPORATION, FORT WAYNE, IN DAAB07-85-C-K561, FFP Award: May 31, 1985 Definitized: May 31, 1985	$19.5	N/A	150

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$120.7	N/A	3870	$118.6	$122.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$	$
Net Change	$0.0	$0.0

Explanation of Change:

The target price decrease from the September 1992 SAR value of $120.8M is due to the incorporation of a credit modification. The Contractor's estimated price at completion dated Mar 1992 reflects their reported loss position of $2.1M and does not include subsequent contract modifications.

15. Contract Information (Cont'd):
Cost and schedule variance reporting not required for this FFP contract.

SINCGARS SECOND SOURCE:	Initial Contract Price Target	Ceiling	Qty
GENERAL DYNAMICS, SAN DIEGO, CA DAAB07-88-C-T026, FPAF Award: July 15, 1988 Definitized: July 15, 1988	$21.9	N/A	400

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$70.5	N/A	9625	$187.8	$199.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$	$
Net Change	$0.0	$0.0

Explanation of Change:

The target price increase from the September 1992 SAR value of $50.0M is due to the award of Option 2 in Nov 92 and the incorporation of modifications for engineering change orders. The contractor's estimate at completion includes their reported loss position of approximately $117.3M and does not include reliability award fees yet to be earned.

Cost and schedule variance reporting not required for this FPAF contract.

SINCGARS GROUND PROD:	Initial Contract Price Target	Ceiling	Qty
ITT CORPORATION, FORT WAYNE, IN DAAB07-92-C-G004, FPAF Award: March 10, 1992 Definitized: March 10, 1992	$224.7	$0.0	16000

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$226.6	$0.0	16000	$226.6	$230.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$	$
Net Change	$0.0	$0.0

15. Contract Information (Cont'd):

Explanation of Change:

The Program Manager's estimate at completion includes reliability award fees yet to be earned by the Contractor.

This is the first time this contract will appear in the SAR.

Cost and schedule variance reporting not required for this FPAF contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 72.0% (18 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 43.9% ($1898.8 / $4322.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	188.2	3.2	6.6	11.4	209.4
Procurement	1710.6	414.2	421.9	1566.5	4113.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1898.8	417.4	428.5	1577.9	4322.6

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: RDT&E - All Sources								
1976				0.7	0.4	0.4	0.4	6.6
197T				0.3	0.2	0.2	0.2	2.9
1977				3.2	2.0	2.0	2.0	2.6
1978				9.3	6.2	6.2	6.2	6.8
1979				16.8	12.4	12.4	12.4	8.4
1980				24.8	20.0	20.0	20.0	10.6
1981				27.5	24.4	24.4	24.4	10.6
1982				14.0	13.2	13.2	13.2	7.6
1983				12.0	11.8	11.8	11.8	4.9
1984				10.1	10.3	10.3	10.3	3.8
1985				9.9	10.4	10.4	10.4	3.4
1986				11.0	12.0	12.0	12.0	2.8
1987				13.3	14.8	14.8	14.8	2.7
1988				14.3	16.5	16.5	16.5	3.0
1989				7.7	9.2	9.2	9.2	4.2
1990				10.2	12.8	12.8	12.8	4.0
1991				2.1	2.7	2.7	2.7	4.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)

Appropriation: RDT&E - All Sources (Cont'd)

1992				1.3	1.7	1.7	1.7	2.8
1993				5.3	7.2	4.0	0.6	2.4
1994				2.3	3.2			2.4
1995				4.6	6.6			2.3
1996				5.3	7.7			2.3
1997				2.5	3.7			2.2
Subtot				208.5	209.4	185.0	181.6	

Appropriation: Procurement - All Sources

1983	175	1.2	17.3	19.6	20.3	20.3	20.3	4.9
1984	1325	3.1	56.7	63.0	66.9	66.9	66.9	3.8
1985	10750	4.4	143.8	152.1	166.5	166.5	166.5	3.4
1986	400	0.4	74.6	75.7	85.6	85.6	85.3	2.8
1987				11.1	13.0	13.0	13.0	2.7
1988	720		25.8	26.3	32.2	32.2	31.4	3.0
1989	15999	3.1	194.5	201.5	253.8	253.3	250.9	4.2
1990	2925	5.4	54.6	62.1	80.8	80.8	55.8	4.0
1991	17800	1.0	228.3	231.0	309.0	283.9	223.0	4.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: Procurement - All Sources (Cont'd)								
1992	27731	5.5	240.3	263.2	360.0	335.6	50.5	2.8
1993	22305	0.6	213.7	230.3	322.5	22.2	0.9	2.4
1994	25283	0.1	272.5	290.5	414.2			2.4
1995	26328	0.1	270.4	289.4	421.9			2.3
1996	25250	0.1	263.5	280.4	417.9			2.3
1997	18720	0.1	181.4	194.9	297.0			2.2
1998	20000	0.1	152.6	194.3	302.4			2.2
1999	20000	0.1	189.3	211.9	337.2			2.2
2000	11134	0.1	173.1	130.4	212.0			2.2
Subtot	246845	25.4	2752.4	2927.7	4113.2	1360.3	964.5	
Appropriation: MILCON - All Sources - None.								
Appropriation: O&M - All Sources - None.								
Total	246845	25.4	2752.4	3136.2	4322.6	1545.3	1146.1	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1976				0.7	0.4	0.4	0.4	6.6
197T				0.3	0.2	0.2	0.2	2.9

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1977				3.2	2.0	2.0	2.0	2.6
1978				9.3	6.2	6.2	6.2	6.8
1979				16.8	12.4	12.4	12.4	8.4
1980				24.8	20.0	20.0	20.0	10.6
1981				27.5	24.4	24.4	24.4	10.6
1982				14.0	13.2	13.2	13.2	7.6
1983				12.0	11.8	11.8	11.8	4.9
1984				10.1	10.3	10.3	10.3	3.8
1985				9.9	10.4	10.4	10.4	3.4
1986				11.0	12.0	12.0	12.0	2.8
1987				13.3	14.8	14.8	14.8	2.7
1988				14.3	16.5	16.5	16.5	3.0
1989				7.7	9.2	9.2	9.2	4.2
1990				10.2	12.8	12.8	12.8	4.0
1991				2.1	2.7	2.7	2.7	4.3
1992				1.3	1.7	1.7	1.7	2.8
1993				5.3	7.2	4.0	0.6	2.4
1994				2.3	3.2			2.4

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1995				4.6	6.6			2.3
1996				5.3	7.7			2.3
1997				2.5	3.7			2.2
Subtot				208.5	209.4	185.0	181.6	

Appropriation: 2031 Aircraft Procurement, Army

1985	150	4.3	10.6	17.4	19.0	19.0	19.0	3.4
Subtot	150	4.3	10.6	17.4	19.0	19.0	19.0	

OPA inflation indices were used since the Airborne radios are Communications-Electronics equipment. All requirements for the Airborne radio are funded in the OPA appropriation beginning in FY88.

Appropriation: 2035 Other Procurement, Army

1983	175	1.2	17.3	19.6	20.3	20.3	20.3	4.9
1984	1325	3.1	56.7	63.0	66.9	66.9	66.9	3.8
1985	10268	0.1	131.4	132.9	145.5	145.5	145.5	3.4
1986	400	0.4	74.6	75.7	85.6	85.6	85.3	2.8
1987				11.1	13.0	13.0	13.0	2.7
1988	720		25.8	26.3	32.2	32.2	31.4	3.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1989	13599	3.1	172.1	179.1	225.6	225.1	224.8	4.2
1990	2925	5.4	54.6	62.1	80.8	80.8	55.8	4.0
1991	15328	1.0	211.2	213.9	286.2	261.1	210.1	4.3
1992	19885	5.5	176.5	199.4	272.6	252.3	41.4	2.8
1993	12329	0.6	139.7	156.3	218.9	22.2	0.9	2.4
1994	20563	0.1	230.4	248.4	354.2			2.4
1995	22239	0.1	235.4	254.4	370.9			2.3
1996	21553	0.1	222.9	239.8	357.4			2.3
1997	12893	0.1	141.9	155.4	236.8			2.2
1998	20000	0.1	152.6	175.0	272.4			2.2
1999	20000	0.1	189.3	202.5	322.2			2.2
2000	11134	0.1	173.1	130.4	212.0			2.2
Subtot	205336	21.1	2405.5	2545.3	3573.5	1205.0	895.4	
Army	205486	25.4	2416.1	2771.2	3801.9	1409.0	1096.0	

NOTE: FY 89 Other Procurement, Army (OPA) quantity is understated by 1200 units and FY 90 OPA is overstated by 1200 units. Funding for these years is correct as shown. Airborne radio, option 2 for 1200 units was awarded in April 1989 with FY 89 funding.

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1109 Procurement, Marine Corps								
1989	2300		21.8	21.8	27.4	27.4	25.3	4.2
1990								4.0
1991								4.3
1992	4100		38.3	38.3	52.4	49.7	2.3	2.8
1993	5290		41.7	41.7	58.4			2.4
1994	3800		33.2	33.2	47.3			2.4
1995	3825		32.4	32.4	47.2			2.3
1996	3030		33.6	33.6	50.1			2.3
1997	5510		36.2	36.2	55.1			2.2
1998				19.3	30.0			2.2
1999				9.4	15.0			2.2
Subtot	27855		237.2	265.9	382.9	77.1	27.6	
Appropriation: 1810 Other Procurement, Navy								
1985	332		1.8	1.8	2.0	2.0	2.0	3.4
1986								2.8
1987								2.7
1988								3.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1989	100		0.6	0.6	0.8	0.8	0.8	4.2
1990								4.0
1991	586		4.3	4.3	5.7	5.7	2.1	4.3
1992	378		2.9	2.9	4.0	3.1	0.3	2.8
1993	940		6.9	6.9	9.7			2.4
1994	191		1.9	1.9	2.7			2.4
1995	236		2.3	2.3	3.4			2.3
1996	300		3.4	3.4	5.1			2.3
1997	247		2.6	2.6	4.0			2.2
Subtot	3310		26.7	26.7	37.4	11.6	5.2	
Navy	31165		263.9	292.6	420.3	88.7	32.8	
Appropriation: 3080 Other Procurement, Air Force								
1991	375		2.1	2.1	2.8	2.8	1.8	4.3
1992	974		5.6	5.6	7.7	7.2	0.6	2.8
1993	137		1.3	1.3	1.8			2.4
1994	729		7.0	7.0	10.0			2.4
1995	28		0.3	0.3	0.4			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Years	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
1996	367		3.6	3.6	5.3			2.3
1997	70		0.7	0.7	1.1			2.2
Subtot	2680		20.6	20.6	29.1	10.0	2.4	
USAF	2680		20.6	20.6	29.1	10.0	2.4	
Appropriation: 0350 National Guard & Reserve Equipm,Defense								
1991	1511		10.7	10.7	14.3	14.3	9.0	4.3
1992	2394		17.0	17.0	23.3	23.3	5.9	2.8
1993	3609		24.1	24.1	33.7			2.4
Subtot	7514		51.8	51.8	71.3	37.6	14.9	
DoD	7514		51.8	51.8	71.3	37.6	14.9	
Grand Total	246845	25.4	2752.4	3136.2	4322.6	1545.3	1146.1	

Expenditures and obligations reflect Program Office records as of February 28, 1993.

17. Production Rate Data:

a. Production Baseline Rate

The steady-state, full-rate production baseline of 35,400 per year (33,000 ground, 2,400 airborne) was approved by the Decision Coordinating Paper (DCP) #156 dated September, 1983.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	369.0	414.2	517.4	-45.2	+103.2
Procurement Qty	22526	25283	35400	-2757	+10117
Proc. Unit Cost	0.016	0.016	0.015	0.000	-0.001
FY 1995					
Procurement Cost	361.0	421.9	529.0	-60.9	+107.1
Procurement Qty	22526	26328	35400	-3802	+9072
Proc. Unit Cost	0.016	0.016	0.015	0.000	-0.001
Balance of Proc. (FY 1996 to Complete)	1680.3	1566.5	1304.3	+113.8	-262.2

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	42855/44541

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

SINCGARS is the VHF-FM radio communication system which provides the primary means of command and control for infantry, artillery and armor units. Since SINCGARS will be fielded to every type of unit in the Army, there is no "typical" division set; however; 4,500 receiver-transmitters (RTs) are used as an average division quantity. Ninety-eight per cent of the total buy will be fielded; costs shown are based on fielded divisions. SINCGARS does not require a dedicated operator except for an average of 1200 retransmission operators needed for specific missions. Operating tempo (peacetime) varies depending on the theater in which the radio is deployed and ranges

18a. Operating and Support Costs (Cont'd):
from 177 hours per year for Reserve Units to 1638 hours per year in Europe. No depot overhaul is scheduled. Operating and Maintenance (O&M) (consumable) repair parts includes batteries. Maintenance includes depot maintenance, civilian field maintenance labor, and interim contractor support. Other Operating and Support (O&S) costs include training, transportation, System/Project Management and other sustaining support costs. The operating life of SINCGARS is 20 years. No operating and support cost data is currently available for the antecedent system, AN/PRC-77 and AN/VRC-12 family of radios.

SINCGARS Program Life Cycle Cost Estimate validated April 5, 1993.

b. Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Division (4500 RTs)	Avg Annual Cost Per (Antecedent)
O&M Repair Parts	3.4	N/A
Procurement Funded Mat'l	0.4	N/A
Maintenance	0.1	N/A
Military Personnel	1.1	N/A
Oth Operating & Support	0.2	N/A
Total	5.2	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	2.7	---	---	---	2.7
Total	2.7	---	---	---	2.7

N-34 STD MSL 2

SECRET

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: STD MSL (SM-2) II

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
STANDARD MISSILE 2 MEDIUM RANGE/EXTENDED RANGE

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
COMMANDER
NAVAL SEA SYSTEMS COMMAND
(PMS 422)
WASHINGTON, DC 20362-5101

CAPT W.C. STARK
Assigned: July 15, 1989
AV 332-0662 COMM (703)602-0662

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603318N Project S01632
PE 0603321N Project S1671
PE 0604365N
PE 0604366N Project S00439
PROCUREMENT:
APPN 1507 ICN 0204229N (Navy)

No Security Objection to Open Publication
(AS AMENDED)
93-C-0438
MAY 26 1993
Office of the Chief of
Naval Operations Dept. of the Navy

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MAY 26 1993

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

93-699

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 0702096N

5. (U) Related Programs:
(U) FFG-7 Frigate, CG 47 AEGIS Cruiser, and DDG 51 AEGIS Destroyer Ship Classes, and TERRIER CG/NTU, TARTAR CGN/NTU, and Vertical Launch System.

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7. (U) Program Highlights:

a. (U) Significant Historical Developments --

(U) The STANDARD Missile-2 Block I (RIM-67), Extended Range Development program was initiated in August 1976. The Block II is an improved missile with capability to counter high speed, higher altitude anti-ship missiles in an advanced ECM environment. Based upon TECHEVAL and OPEVAL results the CNO recommended approval of limited production in May 1983. The Block II improvements are required to meet the Advanced Anti-Ship Missile (ASM) threats of the mid 1980s.

(U) The STANDARD Missile-2, Medium Range, Block II (RIM/66H) is a derivative of the STANDARD Missile-2, Block II Extended Range that incorporated a new rocket motor and a modified airframe for compatibility with the vertical launcher system. Initial pilot production of 30 medium range rounds was approved for FY 83 in order to provide missiles for CSSQT and FOT&E testing in the CG 47 AEGIS Cruisers, the first medium range Block II ship. The Block II improvements are required to meet the Advanced Anti-Ship Missile (ASM) threats of the mid 1980s.

(U) The Milestone IIIC ARB was conducted 20 February 1985. On 8 June 1985, SECNAV approved limited production (Lot #3) for a FY 85 buy of 255 ER missiles and 529 MR missiles.

(U) The Milestone IIID Decision Memorandum was signed on 15 May 1986. SECNAV approved limited production for a FY 86 buy of 470 ER missiles and 846 MR missiles.

(U) The Milestone IIIE ARB was conducted October 1986 and the Navy Program Decision Meeting was held on 26 November 1986. As a result, the Approval for Full Production Decision Memorandum was signed 17 December 1986. Follower producer source selection of the GC&A was awarded to Raytheon Company on 6 June 1986. Second sources were selected for all STANDARD Missile components and all contracts were competitively bid in FY 88 except the MK 30 Sustainer which will remain single source due to small procurement quantities. Second sources selected for qualification were Raytheon (Guidance, Control,

7a. (U) Program Highlights (Cont'd):

and Airframe); ATI (MK 115 Warhead Case); Bendix (Target Detecting Device); ARC (MK 104 Dual Thrust Rocket Motor); and Hercules (MK 70 Booster).

(U) Approval for production of the Block III was received 12 May 1988 by the Navy Acquisition Review Board.

(U) The Missile Homing Improvement Program (MHIP) was approved for Rapid Development Capability in January 1989.

(U) The Block III achieved IOC in August 1990. The Block IIIA completed OPEVAL in August 1991 with eleven out of twelve successful firings. The Block IIIA Production Readiness Review (PRR) process was completed in May 1991. The assembly of ordnance sections and integration into FTRs to support DT/OPEVAL Testing of the Block IIIA was initiated. The Block IIIB completed Technical Risk Assessment. A NPDM was held on 6 June 1991. This resulted in a restructure of the program and approved a new program baseline. In October/November 1990 five successful static firings of the Block IV Booster were completed. The Block IV restrained firing in a MK41 VLS was completed.

b. (U) Significant Developments Since Last Report --
(U) General Dynamics Air Defense Systems, Pomona, CA was acquired by Hughes Missile Systems Company and is in the process of moving to Tuscon, AZ. This move is expected to be completed in March 1995. The Block IIIA production contracts were awarded in January 1992 as options to the FY91 procurement contracts. Two Block IV PTV Flights were successfully flown at WSMR in April and July 1992. This is the first SAR separating Block I/II/III/IIIA/IIIB and the Block IV as separate end items. This system will satisfy mission requirements.

(b)(1)

8. (U) Threshold Breaches:
(U) There is a schedule and performace breach to the Acquisition Program Baseline (APB) dated 13 January 1992 for the SM-2 BLK I/II/III/A/B program; there is no Nunn-McCurdy cost breach for the SM-2 BLK IV program.

9. (U) Schedule:
SM-2 BLK I/II/III/A/B

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
BLOCK II MR			
First Flt Test (development test)	FEB 83	FEB 83	FEB 83
Pilot Production Approved	JUN 83	JUN 83	JUN 83
Lot 1 Approval for Limited Prod	FEB 84	FEB 84	FEB 84
DT/OT and OPEVAL	SEP 84	SEP 84	SEP 84
Lot 2 Approval for Limited Prod	JUN 85	JUN 85	JUN 85
FOT&E USS VINCENNES CG-49	NOV 85	NOV 85	MAY 86
Lot 3 ALP	APR 86	APR 86	MAY 86
Milestone IIIE(AFP)	DEC 84	DEC 86	DEC 86
BLOCK II ER			
OPEVAL Complete	MAR 83	MAR 83	MAR 83
Pilot Production Approved	APR 82	APR 82	APR 82
Lot 1 Approval for Limited Production	JUN 83	JUN 83	JUN 83
Lot 2 Approval for Limited Production	FEB 84	FEB 84	FEB 84
Lot 3 Approval for Limited Production	MAR 85	MAR 85	MAR 85
FOT&E USS MAHAN DDG 42	MAR 85	MAR 85	MAR 85
Lot 4 Approval for Limited Production	APR 86	APR 86	MAY 86
Milestone IIIE (AFP)	DEC 84	DEC 84	DEC 86

(b)(1)

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STD MSL (SM-2) II, December 31, 1992

9a. (U) Schedule (Cont'd):
SM-2 BLK I/II/III/A/B

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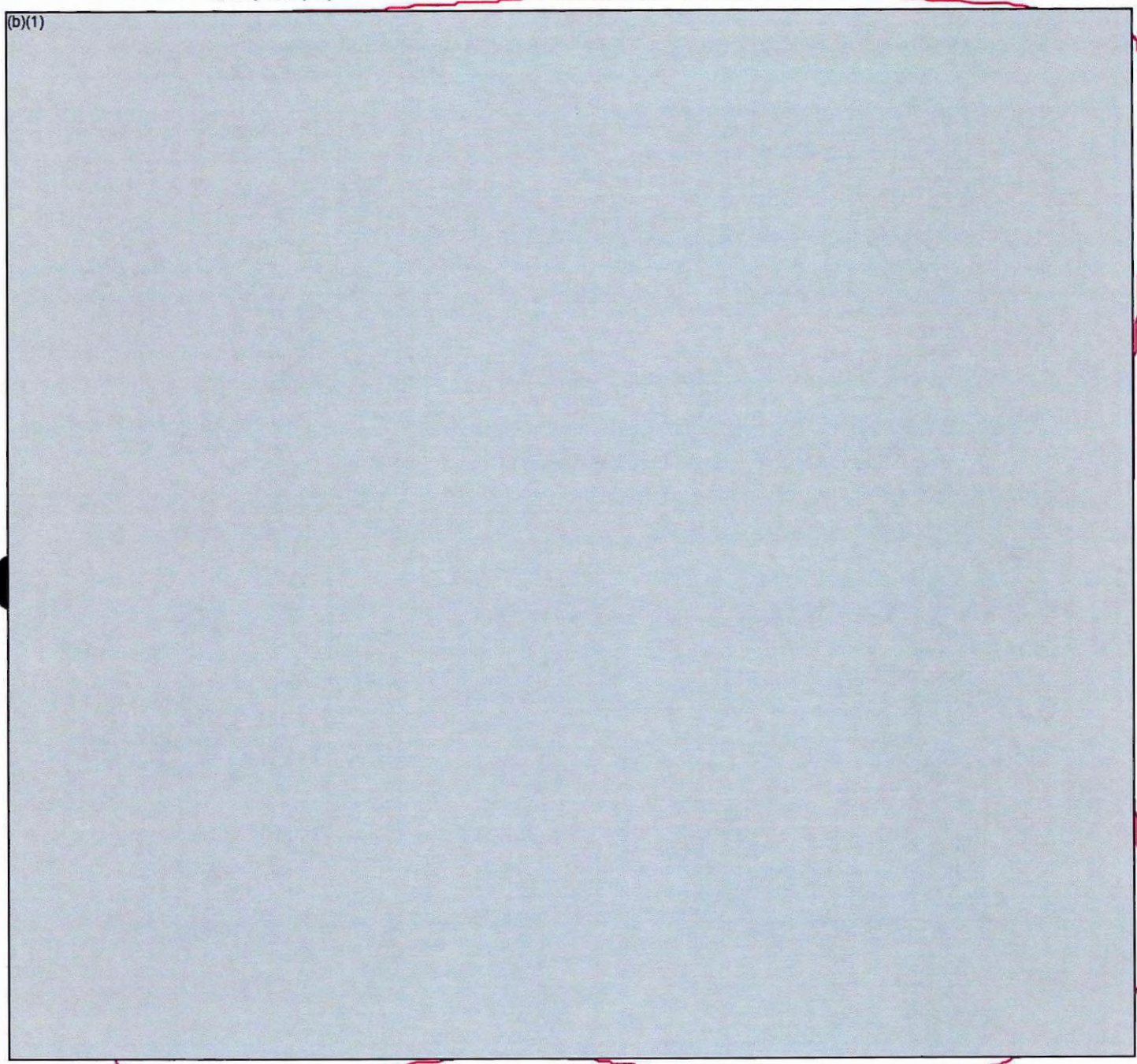

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10a. (U) Performance Characteristics (Cont'd):
SM-2 BLK I/II/III/A/B

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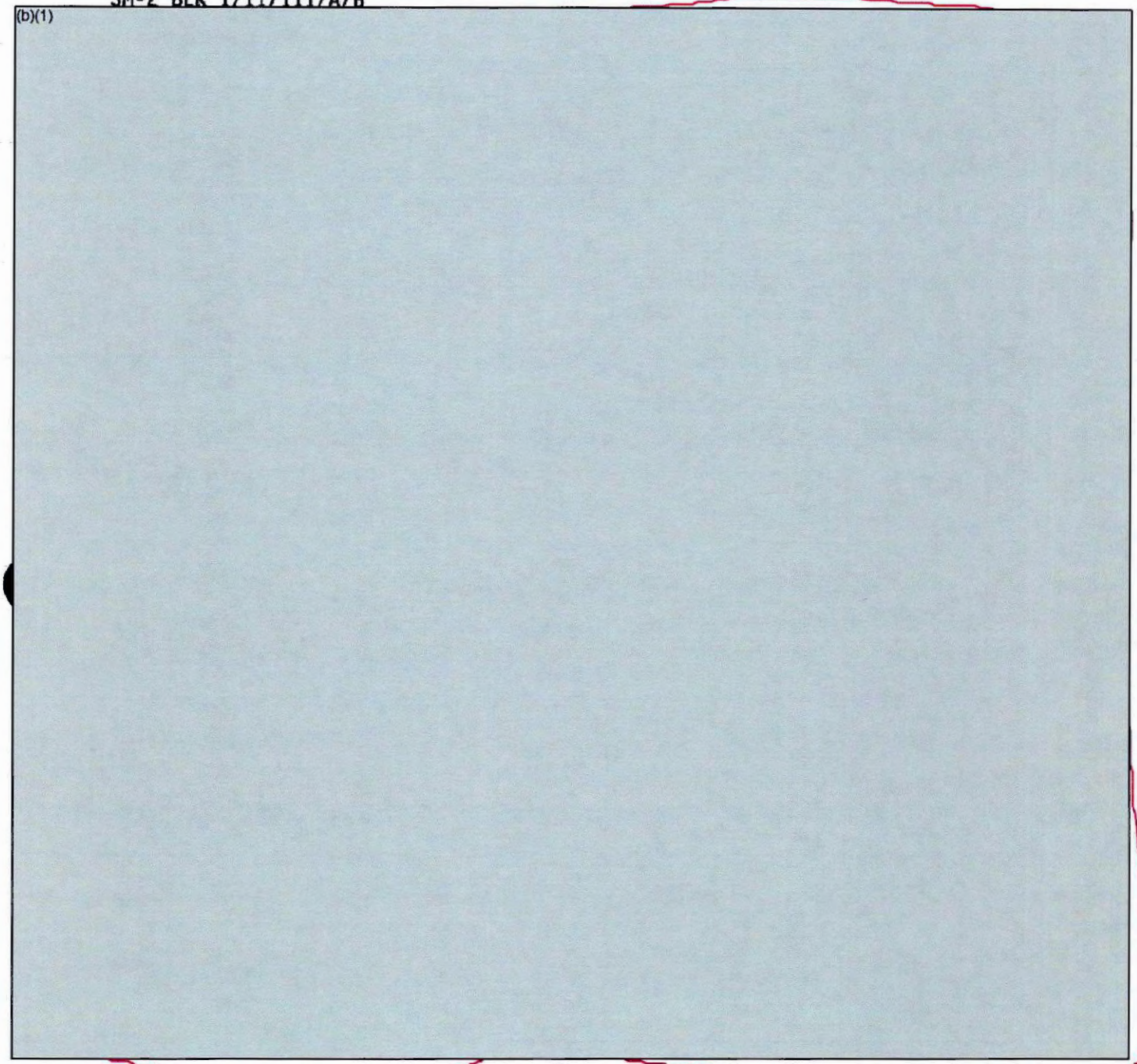

10a. (U) Performance Characteristics (Cont'd):
SM-2 BLK I/II/III/A/B

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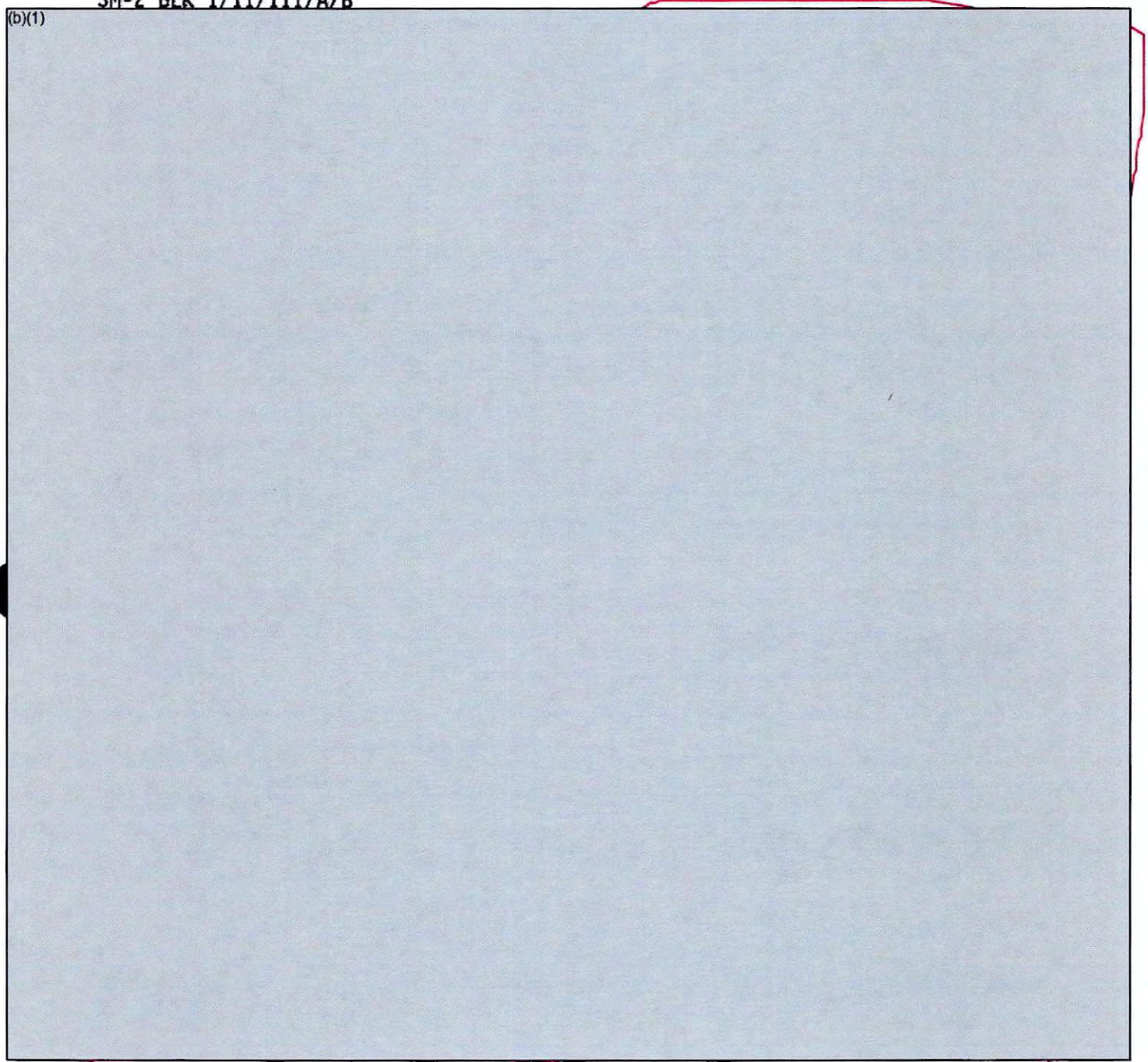

10d. (U) Performance Characteristics (Cont'd):
SM-2 BLK IV

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b. (U) Previous Change Explanations --

(U) BLOCK IV MISSILE OPERATIONAL CHARACTERISTICS UPDATED TO REFLECT LATEST RELIABILITY ANALYSES.

c. (U) Current Change Explanations --

(U) (CH-1) OPERATIONAL CHARACTERISTICS UPDATED TO REFLECT LATEST FLIGHT RELIABILITY ANALYSES.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Baseline dated 14 May 1993.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 14 May 1993.

II. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
SM-2 BLK I/II/III/A/B

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	648.4	1084.7	760.6
Procurement	5923.2	7423.7	6072.7
AUR Hardware	(4510.5)		(4213.9)
Other Flyaway	(500.0)		(876.5)
Total Flyaway	(5010.5)		(5090.4)
Non-recurring Support	(388.9)		(494.1)
Fleet Support	(330.9)		(351.0)
Total Other Wpn Sys	(719.8)		(845.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(137.2)
Construction (MILCON)	0.0	34.0	34.2
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	6571.6	8542.4	6867.5
Escalation	1481.2	2182.8	1145.0
Development (RDT&E)	(53.2)	(157.8)	(69.3)
Procurement	(1428.0)	(2016.2)	(1067.1)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	8052.8	10725.2	8012.5

SM-2 BLOCK IV PROGRAM IS INCLUDED WITHIN THE FIGURES FOR APPROVED PROGRAM.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	10778	14677	11363
Total	10778	14677	11363

EXCLUDES 88 RDT&E UNITS THAT ARE NOT CONSIDERED FULLY CONFIGURED.

c. (U) Foreign Military Sales/International Cooperative Programs -- COMMITMENTS TO DATE ARE: 41 SM-2 BLOCK III MISSILES FOR JAPAN AT A COST OF $28.7M IN FY92 AND 50 AT A COST OF $38.3M IN FY93. TAIWAN HAS ALSO COMMITTED FOR 100 SM-2 BLOCK III MISSILES AT A COST OF $50.1M IN FY93.

14677
3309
11473
- 110
363

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
-SM-2 BLOCK II MILESTONE IIIE NPDM OF 17 DECEMBER 1986. BLOCK III MILESTONE IIIB NAVY ARB OF 12 MAY 1988.

11e. (U) Total Program Cost and Quantity (Cont'd):
SM-2 BLK I/II/III/A/B

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 13 January 1992.

SM-2 BLK IV

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	283.9	313.9	315.7
Procurement	1914.6	2133.5	2251.8
AUR Hardware	(1551.7)		(1834.2)
Other Flyaway	(207.0)		(237.4)
Total Flyaway	(1758.7)		(2071.6)
Fleet Support	(60.1)		(69.9)
Non-recurring Support	(66.8)		(77.5)
Total Other Wpn Sys	(126.9)		(147.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(29.0)		(32.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	2198.5	2447.4	2567.5
Escalation	815.9	1698.0	1737.6
Development (RDT&E)	(56.2)	(71.1)	(71.1)
Procurement	(759.7)	(1626.9)	(1666.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3014.4	4145.4	4305.1
b. (U) Quantity --			
Development (RDT&E)	0	0	
Procurement	3000	3204	3204
Total	3000	3204	3204

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Baseline dated 14 May 1993.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 14 May 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

SM-2 BLK I/II/III/A/B

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	8012.5	7886.0	8012.5
(2) Quantity	11363	11473	11363
(3) Unit Cost	0.705	0.687	0.705
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	260.2	260.2	222.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	260.2	260.2	222.1
(2) Quantity	330	330	220
(3) Unit Cost	0.788	0.788	1.010

SM-2 BLK IV

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	4305.1	3834.8	4305.1
(2) Quantity	3204	3204	3204
(3) Unit Cost	1.344	1.197	1.344
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity			
(3) Unit Cost	N/A	N/A	N/A

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

SM-2 BLK IV

Total Program:
End Item: SM-2 BLK I/II/III/A/B/IV

	Current Estimate DEC 92 SAR	Current Year UCR Baseline DEC 91 SAR	Budget Year UCR Baseline N/A
a. (U) Program Acquisition			
(1) Cost (TY$)	12317.6	11720.8	N/A
(2) Quantity	14567	14677	N/A
(3) Unit Cost	0.846	0.799	N/A
b. (U) Current Procurement	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	260.2	260.2	222.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	260.2	260.2	222.1
(2) Quantity	330	330	220
(3) Unit Cost	0.788	0.788	1.010

Note: Budget Year Baseline is established separately for SM-2 BLK I/II/III/A/B and SM-2 BLK IV(see above).

13. (U) **Cost Variance Analysis:**
SM-2 BLK I/II/III/A/B

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	701.6	7351.2	0.0	8052.8
Previous Changes:				
Economic	-33.3	-728.8	+1.6	-760.5
Quantity	-	+270.9	-	+270.9
Schedule	-	+475.2	-	+475.2
Engineering	+5.1	+199.1	-	+204.2
Estimating	+190.6	-819.2	+41.2	-587.4
Other	-	-	-	-
Support	-	+230.8	-	+230.8
Subtotal	+162.4	-372.0	+42.8	-166.8
Current Changes:				
Economic	+0.3	-66.8	-	-66.5
Quantity	-	-92.6	-	-92.6
Schedule	-	+104.0	-	+104.0
Engineering	-	-	-	-
Estimating	-34.4	+315.5	-	+281.1
Other	-	-	-	-
Support	-	-99.5	-	-99.5
Subtotal	-34.1	+160.6	-	+126.5
Total Changes	+128.3	-211.4	+42.8	-40.3
Current Estimate	829.9	7139.8	42.8	8012.5

13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I/II/III/A/B

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	648.4	5923.2	0.0	6571.6
Previous Changes:				
Quantity	-	+285.5	-	+285.5
Schedule	-	+109.8	-	+109.8
Engineering	+16.1	+158.0	-	+174.1
Estimating	+116.2	-660.1	+34.2	-509.7
Other	-	-	-	-
Support	-	+124.7	-	+124.7
Subtotal	+132.3	+17.9	+34.2	+184.4
Current Changes:				
Quantity	-	-44.3	-	-44.3
Schedule	-	+75.0	-	+75.0
Engineering	-	-	-	-
Estimating	-20.1	+141.3	-	+121.2
Other	-	-	-	-
Support	-	-40.4	-	-40.4
Subtotal	-20.1	+131.6	-	+111.5
Total Changes	+112.2	+149.5	+34.2	+295.9
Current Estimate	760.6	6072.7	34.2	6867.5

b. (U) Previous Change Explanations --

RDT&E
Economic: REVISED ESCALATION INDICES.
Engineering: INCREASE REFLECTS PROGRAM RESTRUCTURING CAUSED BY DECISION TO PURSUE AEGIS MISSILES AND ADDITION OF MISSILE HOMING IMPROVEMENT PROGRAM.
Estimating: INCREASE IN FY 87-90 FUNDS TO CONTINUE AND EXTEND (FOR 2 YEARS) THE BLK IIIA/IV DEVELOPMENT PROGRAM. ADJUSTMENT FOR CURRENT AND PRIOR YEAR INFLATION. REPROGRAMMING (GRH/SBIR) IN FY 90. REVISED FY 91-94 REQUIREMENTS. NEW REQUIREMENTS ADDED THROUGH FY97 TO MEET NEW THREAT SCENARIOS.

13b. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I/II/III/A/B

Procurement

Economic: REVISED ESCALATION INDICES.

Quantity: ADDITION OF A PROGRAM YEAR AS A CONTINUING PROGRAM.

Schedule: DECREASE DUE TO A SHIFT OF 160 MISSILES IN FY 92 TO FY 88. INCREASE DUE TO SHIFT OF 310 FY 89-91 MISSILES TO FY 92-94 TO PROCURE MORE ADVANCED MISSILES. FUNDING ADDED BY CONGRESS TO PROCURE 350 ADDITIONAL MISSILES IN FY 90. DECREASE IN FY 92-93 CONTROLS FOR REALLOCATION OF MISSILE QUANTITIES. INCREASE DUE TO PROGRAM STRETCH OUT AND REDUCTION IN ANNUAL BUY QUANTITIES.

Engineering: INTRODUCTION OF EARLY PHASES OF LOW ALTITUDE IMPROVEMENTS AND IMPROVEMENTS TO THE TDD, WARHEAD AND ROCKET MOTOR.

Estimating: DECREASE DUE TO GRH CUTS, NIF AND DPSD REDUCTIONS, REDUCED HARDWARE COSTS DUE TO COMPETITION FOR ALL MAJOR COMPONENTS IN FY 88 AND OUTYEARS. INCREASE DUE TO CHANGE IN MISSILE MIX. ADJUSTMENT FOR CURRENT AND PRIOR YEAR INFLATION. SAVINGS FROM PLANNED CHANGE IN ACQUISITION STRATEGY TO SINGLE SOURCE COMPETITIVE PROCUREMENT. MISCELLANEOUS REPROGRAMMING DUE TO PRODUCTION EFFICIENCIES AND DUE TO REDUCTIONS FROM DMR, CALS, CAAS, AND NIF RATES. INCREASE IN G,C&A PROCUREMENT CONTRACT OVER ESTIMATED AMOUNT. ADJUSTMENT TO RECONCILE DIFFERENCES IN PREVIOUS SUPPORT CHANGES. INCREASED FUNDING FOR INFLATION IMPACT. DECREASE DUE TO CAAS AND SCA ADJUSTMENTS.

Support: DECREASE DUE TO ANNUALIZATION AND REALIGNMENT OF SUPPORT COSTS AND SAVINGS ON INITIAL SPARES COMPONENTS PROCUREMENT DUE TO COMPETITION. INCREASE DUE TO ADDITIONAL PROGRAM YEARS AND TO SUPPORT NEW MISSILE CONFIGURATIONS. INCREASE IN TEST EQUIPMENT COST TO SUPPORT COMPLEX NEW MISSILES. ADJUSTMENT TO RECONCILE DIFFERENCES IN PREVIOUS SUPPORT CHANGES.

MILCON

Economic: INCREASE DUE TO REVISED ESCALATION INDICES.

Estimating: FUNDS ADDED FOR CONSTRUCTION OF ENCAN/DECAN FACILITIES, ADDITIONAL MAGAZINES AND IMPROVED FACILITIES AT NAVAL WEAPON STATIONS. INCREASE DUE TO REVISED REQUIREMENTS AT NWS SEAL BEACH AND CONCORD. DECREASE DUE TO ADJUSTMENT FOR CURRENT AND PRIOR YEAR INFLATION. DECREASE DUE TO REVISED REQUIREMENTS IN FY92/93.

13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I/II/III/A/B

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-4.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+4.7
Decrease due to revised requirements FY94-FY98. (Estimating)	-20.4	-34.9
RDT&E Subtotal	-20.1	-34.1
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-82.0
Decrease associated with reduction of 110 BLK IIIA missiles. (Quantity)	-44.3	-92.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+15.2
Increase due to program stretch-out of remaining missile quantities. (Schedule)	+75.0	+104.0
Adjustment for Current and Prior Inflation. (Estimating)	+11.1	+14.7
Revised Program Estimate due to program stretch-out. (Estimating)	+276.9	+474.1
Correction to align Flyaway and Support. (Estimating)	+127.8	+230.0
Correction to align Flyaway and Support. (Support)	-127.8	-230.0
Decrease in Initial Spares. (Support)	-8.4	-11.9
Increase due to Non-recurring Support adjustment. (Support)	+42.8	+66.5
Increase due to Fleet Support adjustment. (Support)	+53.5	+76.2
Adjustment for Current and Prior Inflation. (Support)	-0.5	-0.3
Decrease due to incorporation of POM 94 Budget Decisions. (Estimating)	-229.6	-334.4
Increase due to Below Threshold reprogramming. (Estimating)	+0.1	+0.2
Decrease due to ILS Integrator savings. (Estimating)	-6.9	-10.2

13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I/II/III/A/B

	(Dollars in Millions) Base-Year	Then-Year
Increase due to Transfer of Warfare and Engineering Centers. (Estimating)	+1.2	+1.7
Decrease due to Inflation Assumptions (FY 1994-99). (Estimating)	-39.3	-60.6
Procurement Subtotal	+131.6	+160.6

SM-2 BLK IV

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	340.1	2674.3	0.0	3014.4
Previous Changes:				
Economic	+2.4	+81.3	-	+83.7
Quantity	-	+428.6	-	+428.6
Schedule	-	+89.4	-	+89.4
Engineering	-	+123.0	-	+123.0
Estimating	+62.7	-	-	+62.7
Other	-	-	-	-
Support	-	+33.0	-	+33.0
Subtotal	+65.1	+755.3	-	+820.4
Current Changes:				
Economic	-1.2	-287.7	-	-288.9
Quantity	-	-	-	-
Schedule	-	+44.4	-	+44.4
Engineering	-	-	-	-
Estimating	-17.2	+654.3	-	+637.1
Other	-	-	-	-
Support	-	+77.7	-	+77.7
Subtotal	-18.4	+488.7	-	+470.3
Total Changes	+46.7	+1244.0	-	+1290.7
Current Estimate	386.8	3918.3	-	4305.1

13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	283.9	1914.6	0.0	2198.5
Previous Changes:				
Quantity	-	+35.6	-	+35.6
Schedule	-	-0.1	-	-0.1
Engineering	+41.2	-	-	+41.2
Estimating	+2.3	+9.2	-	+11.5
Other	-	-	-	-
Support	-	+8.1	-	+8.1
Subtotal	+43.5	+52.8	-	+96.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-87.0	-	-87.0
Engineering	-	-	-	-
Estimating	-11.7	+349.2	-	+337.5
Other	-	-	-	-
Support	-	+22.2	-	+22.2
Subtotal	-11.7	+284.4	-	+272.7
Total Changes	+31.8	+337.2	-	+369.0
Current Estimate	315.7	2251.8	-	2567.5

b. (U) Previous Change Explanations --

RDT&E
Economic: Previous Changes reflect cumulative changes from PdE to 1991 Constructed SAR UCR Baseline.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-1.1

13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

	(Dollars in Millions) Base-Year	Then-Year
Decrease due to revised requirements (FY94 - FY99). (Estimating)	-11.8	-17.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.2
RDT&E Subtotal	-11.7	-18.4
(2) Procurement		
Revised indices. (Economic)	N/A	-287.7
Increase due to program stretch-out of remaining missile quantities. (Schedule)	N/A	+168.3
Increase due to program stretch-out. (Estimating)	+611.6	+1067.4
Removal of LLM. (Estimating)	-53.5	-74.0
Correction to align Flyaway and Support. (Estimating)	-6.0	-27.0
Correction to align Flyaway and Support. (Support)	+6.0	+27.0
Decrease in Initial Spares. (Support)	-11.8	-14.7
Increase in Non-recurring Support due to program stretch-out. (Support)	+10.8	+26.6
Increase in Fleet Support due to program stretch-out. (Support)	+17.2	+38.8
Decrease due to incorporation of POM 94 Budget Decision. (Estimating) (Estimating)	-155.0	-239.0
Decrease due to ILS Integrator Savings. (Estimating)	-6.4	-9.8
Increase due to Transfer of Warfare and Engineering Centers (Estimating)	+1.2	+1.9
Decrease due to deferral of Block IV Production until FY95. (Schedule)	-87.0	-123.9
Decrease due to Inflation Assumptions (FY1994-99). (Estimating)	-42.7	-65.2
Procurement Subtotal	+284.4	+488.7

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

SM-2 BLK I/II/III/A/B
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.747	-0.073	-0.023	0.051	0.018	-0.027	--	0.012	-0.042	0.705

SM-2 BLK IV
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.005	-0.064	0.070	0.042	0.038	0.218	--	0.035	0.339	1.344

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --
(U) SM-2 BLK IV DEVELOPMENT:
RAYTHEON, BEDFORD, MA
N00024-87-C-5321, FFP/PI
Award: July 30, 1987
Definitized: July 30, 1987

Initial Contract Price		
Target	Ceiling	Qty
$231.0	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$231.0	N/A	N/A

Estimated Price At Completion	
Contractor	Program Manager
$231.0	$271.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

- Cost/Schedule Variance: CPR data not required on this FFP contract.

NOTE: This is an incrementally funded contract.

15. (U) Contract Information (Cont'd):

(U) SM-2 BLK IIIB AUR:
IRISS RAYTHEON CO, BEDFORD, MA
N00024-90-C-5307, CPAF
Award: December 15, 1989
Definitized: September 5, 1991

Initial Contract Price		
Target	Ceiling	Qty
$139.3	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$139.3	N/A	N/A

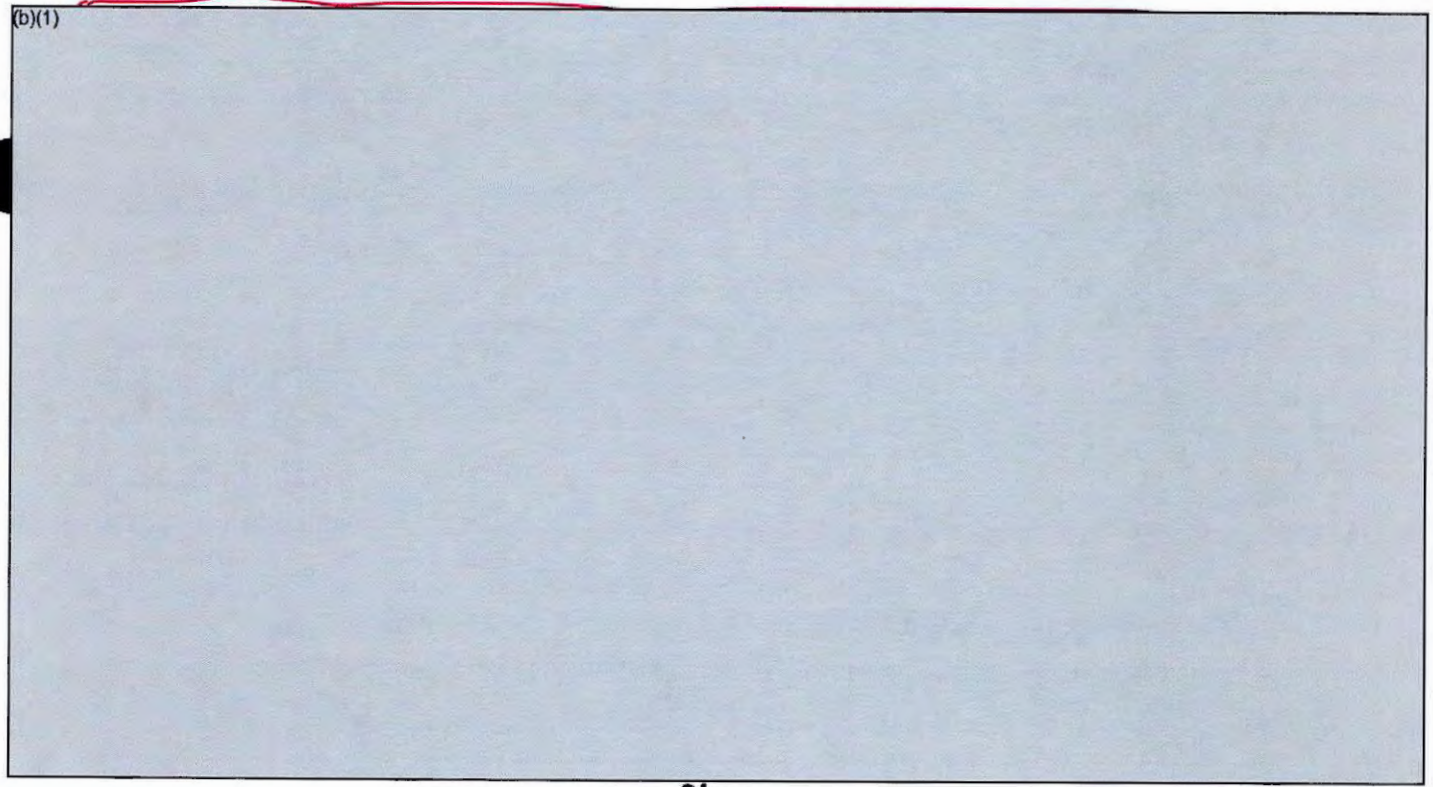
Estimated Price At Completion	
Contractor	Program Manager
$139.3	$160.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.1	$-1.9
Cumulative Variances To Date (11/22/92)	$-13.8	$-6.2
Net Change	$-11.7	$-4.3

Explanation of Change:

Contract variance is due to technical problems with the IR Common Seeker.

(b)(1)



15. (U) Contract Information (Cont'd):

(U) SM-2 AUR FY90 PROC:
GENERAL DYNAMICS, POMONA, CA
N00024-91-C-5303, FFP/PI
Award: December 10, 1990
Definitized: December 10, 1990

Initial Contract Price		
Target	Ceiling	Qty
$126.4	N/A	497

Current Contract Price		
Target	Ceiling	Qty
$126.4	N/A	497

Estimated Price At Completion	
Contractor	Program Manager
$126.4	$126.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

Cost/Schedule Variance: CPR data not required on this FFP contract.

(U) FY90 SM-2 BLOCK III AUR:
RAYTHEON COMPANY, BRISTOL,, TN
N00024-91-C-5304, FFP/PI
Award: December 10, 1990
Definitized: December 10, 1990

Initial Contract Price		
Target	Ceiling	Qty
$66.7	N/A	213

Current Contract Price		
Target	Ceiling	Qty
$66.7	N/A	213

Estimated Price At Completion	
Contractor	Program Manager
$66.7	$66.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

- Cost Schedule Variance: CPR data not required on this FFP contract.

15. (U) Contract Information (Cont'd):

(U) SM-2 FY91 AUR PROD:
RAYTHEON COMPANY, BRISTOL, TN
N00024-92-C-5305, FFP/PI
Award: October 24, 1991
Definitized: October 24, 1991

Initial Contract Price		
Target	Ceiling	Qty
$170.2	N/A	693

Current Contract Price		
Target	Ceiling	Qty
$170.2	N/A	693

Estimated Price At Completion	
Contractor	Program Manager
$170.2	$170.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 52.9% (18 yrs/34 yrs)

(2) Percent Program Cost Appropriated: 56.4% ($6945.7 / $12317.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2009)	Total Program Total
RDT&E	1125.0	63.0	14.4	14.3	1216.7
Procurement	5777.9	222.1	309.4	4748.7	11058.1
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	6945.7	285.1	323.8	4763.0	12317.6

16b. (U) Program Funding Summary (Cont'd):
SM-2 BLK I/II/III/A/B

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

SM-2 BLK I/II/III/A/B

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2005)	Total
RDT&E	748.0	54.2	13.4	14.3	829.9
Procurement	5777.9	222.1	148.7	991.1	7139.8
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	6568.7	276.3	162.1	1005.4	8012.5

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

SM-2 BLK IV

Appropriation	Prior Years (FY87-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2009)	Total
RDT&E	377.0	8.8	1.0	-	386.8
Procurement	-	-	160.7	3757.6	3918.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	377.0	8.8	161.7	3757.6	4305.1

16c. (U) Program Funding Summary (Cont'd):

c. (U) Program Summary -- Total Program

Fiscal Year	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: RDT&E - All Sources							
1982			324.1	305.0	305.0	305.0	7.6
1983			23.6	23.2	23.2	23.2	4.9
1984			17.0	17.3	17.3	17.3	3.8
1985			27.8	29.2	29.2	29.2	3.4
1986			56.8	61.4	61.3	60.2	2.8
1987			65.4	72.7	72.7	67.9	2.7
1988			85.0	97.8	97.7	90.8	3.0
1989			131.3	157.4	157.4	153.9	4.2
1990			120.0	149.7	149.6	132.8	4.0
1991			70.3	90.9	90.3	82.1	4.3
1992			53.0	70.3	68.0	56.6	2.8
1993			36.9	50.1	38.9	5.5	2.4
1994			45.3	63.0			2.4
1995			10.1	14.4			2.3
1996			5.2	7.5			2.3
1997			1.3	1.9			2.2
1998			1.0	1.5			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: RDT&E - All Sources (Cont'd)							
1999			0.9	1.4			2.2
2000			1.3	2.0			2.2
Subtot			1076.3	1216.7	1110.6	1024.5	
Appropriation: Procurement - All Sources							
1976		53.8	92.4	48.4	48.4	48.4	6.6
1977		60.4	73.9	42.9	42.8	41.4	3.8
1978		61.3	74.2	48.2	48.1	48.1	6.8
1979		51.8	66.1	47.3	47.3	47.3	8.7
1980		63.0	82.1	64.7	64.7	64.7	11.8
1981		156.2	198.2	174.3	174.2	174.2	11.6
1982		229.7	287.2	274.3	273.9	265.9	14.3
1983		292.6	399.5	403.5	401.5	389.9	9.0
1984		312.8	385.5	405.1	403.9	382.8	8.0
1985		394.5	443.5	479.7	476.4	459.4	3.4
1986		586.0	658.4	736.8	736.8	728.3	2.8
1987		504.2	583.3	676.2	674.5	655.7	2.7
1988		435.6	472.8	569.6	567.6	555.9	3.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: Procurement - All Sources (Cont'd)							
1989		424.7	473.5	592.9	586.9	559.4	4.2
1990		268.1	304.6	394.6	393.4	348.8	4.0
1991		177.2	221.1	293.6	285.6	144.7	4.3
1992		153.2	195.3	265.6	250.0	105.8	2.8
1993		157.6	186.9	260.2	174.2	17.1	2.4
1994		124.7	156.0	222.1			2.4
1995		181.0	212.5	309.4			2.3
1996		159.9	187.7	279.2			2.3
1997		163.1	186.5	283.6			2.2
1998		160.1	185.2	287.9			2.2
1999		157.7	176.5	280.4			2.2
2000		170.3	191.6	311.0			2.2
2001		171.1	190.8	316.6			2.2
2002		171.7	191.0	323.8			2.2
2003		184.6	203.5	352.6			2.2
2004		209.0	233.9	414.3			
2005		206.9	228.9	414.4			
2006		207.5	224.7	415.7			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: Procurement - All Sources (Cont'd)							
2007		204.2	221.1	417.9			2.2
2008		201.3	217.7	420.7			2.2
2009		106.2	118.4	230.6			2.2
Subtot		7162.0	8324.5	11058.1	5650.2	5037.8	
Appropriation: MILCON - All Sources							
1989			23.6	29.3	29.3	29.3	4.2
1990			10.6	13.5	13.5	10.8	4.0
Subtot			34.2	42.8	42.8	40.1	
Grand Total		7162.0	9435.0	12317.6	6803.6	6102.4	

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I/II/III/A/B

c. (U) Annual Summary -- SM-2 BLK I/II/III/A/B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1982				324.1	305.0	305.0	305.0	7.6
1983				23.6	23.2	23.2	23.2	4.9
1984				17.0	17.3	17.3	17.3	3.8
1985				27.8	29.2	29.2	29.2	3.4
1986				56.8	61.4	61.3	60.2	2.8
1987				40.2	44.7	44.7	42.6	2.7
1988				27.3	31.4	31.3	30.6	3.0
1989				49.6	59.5	59.5	56.3	4.2
1990				47.3	59.0	58.9	56.5	4.0
1991				37.1	48.0	47.9	46.9	4.3
1992				27.3	36.2	35.2	32.4	2.8
1993				24.4	33.1	25.6	4.0	2.4
1994				39.0	54.2			2.4
1995				9.4	13.4			2.3
1996				5.2	7.5			2.3
1997				1.3	1.9			2.2
1998				1.0	1.5			2.2

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I/II/III/A/B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1999				0.9	1.4			2.2
2000				1.3	2.0			2.2
Subtot				760.6	829.9	739.1	704.2	
Appropriation: 1507 Weapons Procurement, Navy								
1976	22		53.8	92.4	48.4	48.4	48.4	6.6
197T								3.6
1977	36		60.4	73.9	42.9	42.8	41.4	3.8
1978	40		61.3	74.2	48.2	48.1	48.1	6.8
1979	40		51.8	66.1	47.3	47.3	47.3	8.7
1980	85		63.0	82.1	64.7	64.7	64.7	11.8
1981	345		156.2	198.2	174.3	174.2	174.2	11.6
1982	495		229.7	287.2	274.3	273.9	265.9	14.3
1983	500		292.6	399.5	403.5	401.5	389.9	9.0
1984	490		312.8	385.5	405.1	403.9	382.8	8.0
1985	730		394.5	443.5	479.7	476.4	459.4	3.4
1986	1271		586.0	658.4	736.8	736.8	728.3	2.8
1987	1194		504.2	583.3	676.2	674.5	655.7	2.7

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I/II/III/A/B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1988	1310		435.6	472.8	569.6	567.6	555.9	3.0
1989	1310		424.7	473.5	592.9	586.9	559.4	4.2
1990	710		268.1	304.6	394.6	393.4	348.8	4.0
1991	405		177.2	221.1	293.6	285.6	144.7	4.3
1992	330		153.2	195.3	265.6	250.0	105.8	2.8
1993	330		157.6	186.9	260.2	174.2	17.1	2.4
1994	220		124.7	156.0	222.1			2.4
1995	181		78.6	102.1	148.7			2.3
1996	180		68.1	86.2	128.2			2.3
1997	177		63.0	75.5	114.8			2.2
1998	155		59.3	72.1	112.1			2.2
1999	140		59.4	69.2	109.9			2.2
2000	180		68.3	80.0	129.9			2.2
2001	180		68.9	79.7	132.3			2.2
2002	180		69.2	79.8	135.3			2.2
2003	127		48.2	55.4	96.0			2.2
2004				11.1	19.7			
2005				7.1	12.9			

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I/II/III/A/B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
Subtot	11363		5090.4	6072.7	7139.8	5650.2	5037.8	

Limited support required for missiles procured in 2003 through completion of production in 2005.

Appropriation: 1205 Military Construction, Navy

1989				23.6	29.3	29.3	29.3	4.2
1990				10.6	13.5	13.5	10.8	4.0
Subtot				34.2	42.8	42.8	40.1	
Grand Total	11363		5090.4	6867.5	8012.5	6432.1	5782.1	

c. (U) Annual Summary -- SM-2 BLK IV

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1987				25.2	28.0	28.0	25.3	2.7
1988				57.7	66.4	66.4	60.2	3.0

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK IV

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1989				81.7	97.9	97.9	97.6	4.2
1990				72.7	90.7	90.7	76.3	4.0
1991				33.2	42.9	42.4	35.2	4.3
1992				25.7	34.1	32.8	24.2	2.8
1993				12.5	17.0	13.3	1.5	2.4
1994				6.3	8.8			2.4
1995				0.7	1.0			2.3
Subtot				315.7	386.8	371.5	320.3	
Appropriation: 1507 Weapons Procurement, Navy								
1995	145		102.4	110.4	160.7			2.3
1996	150		91.8	101.5	151.0			2.3
1997	153		100.1	111.0	168.8			2.2
1998	150		100.8	113.1	175.8			2.2
1999	130		98.3	107.3	170.5			2.2
2000	150		102.0	111.6	181.1			2.2
2001	150		102.2	111.1	184.3			2.2
2002	150		102.5	111.2	188.5			2.2

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK IV

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
2003	203		136.4	148.1	256.6			2.2
2004	330		209.0	222.8	394.6			2.2
2005	330		206.9	221.8	401.5			2.2
2006	330		207.5	224.7	415.7			2.2
2007	330		204.2	221.1	417.9			2.2
2008	330		201.3	217.7	420.7			2.2
2009	173		106.2	118.4	230.6			2.2
Subtot	3204		2071.6	2251.8	3918.3			
Grand Total	3204		2071.6	2567.5	4305.1	371.5	320.3	

17. (U) Production Rate Data:

SM-2 BLK I/II/III/A/B

a. (U) Production Baseline Rate

The steady-state, full-rate production baseline addressing all SM-2 variants has not been established.

17b. (U) Production Rate Data (Cont'd):
SM-2 BLK I/II/III/A/B

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	222.1	222.1	604.8	0.0	+382.7
Procurement Qty	220	220	1680	0	+1460
Proc. Unit Cost	1.010	1.010	0.360	0.000	-0.650
FY 1995					
Procurement Cost	150.7	148.7	35.0	+2.0	-113.7
Procurement Qty	220	181	40	+39	-141
Proc. Unit Cost	0.685	0.822	0.875	-0.137	+0.053
Balance of Proc. (FY 1996 to Complete)	937.5	991.1	0.0	-53.6	-991.1

The Maximum Economic Column in FY95 reflects buyout of remaining program.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	11363/9643

d. (U) Approved Design-to-Cost Objective -- N/A.

APPROVED DESIGN TO COST GOAL - NO DESIGN-TO-COST GOALS APPLY TO THE SM-2 PROGRAM, AS THIS PROGRAM WAS INITIATED IN 1966, PRIOR TO DESIGN-TO-COST IMPLEMENTATION.

SM-2 BLK IV

a. (U) Production Baseline Rate

This program is pre-Milestone III and no full-rate production baseline has been determined.

17b. (U) Production Rate Data (Cont'd):
SM-2 BLK IV

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	286.5	160.7	1210.9	+125.8	+1050.2
Procurement Qty	220	145	1680	+75	+1535
Proc. Unit Cost	1.302	1.108	0.721	+0.194	-0.387
Balance of Proc. (FY 1996 to Complete)	3868.8	3757.6	1113.8	+111.2	-2643.8

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	3204/0

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
SM-2 BLK I/II/III/A/B

a. (U) Assumptions and Ground Rules --

SINCE THE SM-2 IS A WOODEN ROUND, PERSONNEL COST ARE UNNECESSARY FOR MISSILE OPERATION. THE O&S CONSUMABLES INCLUDE RANGE AND TARGET COST AS WELL AS POST FLIGHT ANALYSIS. THE DIRECT MAINTENANCE CONSISTS OF INTERMEDIATE AND DEPOT MAINTENANCE. THE SUSTAINING INVESTMENT CATEGORY INCLUDES REPLENISHMENT SPARES AND SUPPORT EQUIPMENT, EQUIPMENT MODIFICATION, RECEIPT, SEGREGATION STORAGE AND ISSUE (RSSI). DIRECT SUPPORT CONSISTS OF TRANSPORTATION AND TECHNICAL SUPPORT. THERE IS NO ANTECEDENT SYSTEM.

18b. (U) Operating and Support Costs (Cont'd):
SM-2 BLK I/II/III/A/B

(b)(1)

[redacted]

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	79.7	13.9	14.2	71.6	179.4
Total	79.7	13.9	14.2	71.6	179.4

SM-2 BLK IV

a. (U) Assumptions and Ground Rules --

SINCE THE SM-2 IS A WOODEN ROUND, PERSONNEL COSTS ARE UNECESSARY FOR MISSILE OPERATION. THE O&S CONSUMABLES INCLUDE RANGE AND TARGET COST AS WELL AS POST FLIGHT ANALYSIS. THE DIRECT MAINTENANCE CONSISTS OF INTERMEDIATE AND DEPOT MAINTENANCE. THE SUSTAINING INVESTMENT CATEGORY INCLUDES REPLENISHMENT SPARES AND SUPPORT EQUIPMENT,

18a. (U) Operating and Support Costs (Cont'd):
SM-2 BLK IV
EQUIPMENT MODIFICATION, RECEIPT, SEGRAGATION STORAGE AND ISSUE (RSSI). DIRECT SUPPORT CONSISTS OF TRANSPORTATION AND TECHNICAL SUPPORT. THERE IS NO ANTECEDENT SYSTEM.

(b)(1)

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	---	---	---	58.6	58.6
Total	---	---	---	58.6	58.6

N-3 AN/BSY-1

92-104

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(QA)823)
PROGRAM: AN/BSY-1

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION
AS AMENDED
MAY 27 1993
2

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
AN/BSY-1 Submarine Combat Weapons System

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

Program Executive Officer
Submarines (PMO425)
2531 Jefferson Davis Hwy
Arlington, VA 22242-5168

CAPT George A. Kent, USN
Assigned: March 27, 1992
AV 332-1299 COMM (703) 602-1299

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604503N (Shared) Project S0219
PE 0604524N Project S1347
PE 0603524 (Shared) Project S1346
PE 0603504 (Shared) Project S0223
PE 0204281N (Shared) Project S0239

No Security Objection
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MAY 26 1993
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Dept. of the Navy

[redacted]

93-714

[redacted]

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 1810 ICN 221700N (Navy) (Shared)
APPN 1810 ICN 204261 (Navy) (Shared)

5. (U) Related Programs: None.

6. (U) Mission and Description:
AN/BSY-1 is the combat system for the improved SSN 688 (688I) class submarines, FY83-90 new construction (SSN 751-773). AN/BSY-1 replaces the AN/BQQ-5 sonar and CCS MK1 combat systems, as well as a number of peripheral acoustic standalone components. AN/BSY-1 provides capabilities for manuevering, target motion analysis, combat system service, combat system management, onboard training, weapons, countermeasures and mines, piloting and navigation. It provides increased acoustic performance and weapons control over previous SSN 688 class systems.

To support the SSN 688I class mission, the following functional capabilities are provided/supported by the AN/BSY-1 system: (1) detection of multiple contacts, including early warning threat determination through processing and analysis of sensor data; (2) classification of sensor data for the purpose of identifying contact; (3) localization (tracking) of contacts to determine position and motion through analysis of sensor data; (4) preset, launch, and control of weapons and countermeasures; (5) command and control for correlation of sensor data and audio circuits; (6) communication with submerged, surface, airborne, and land forces via voice and data links; and (7) navigation in open ocean and restricted waters.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The AN/BSY-1 Program was initiated in response to the Mission Element Needs Statement (MENS) and was designated as a Major System Acquisition Category (ACAT I) Program by SECDEF on 28 NOV 1980. The acquisition strategy was approved by Defense Systems Acquisition Review Council (DSARC) Milestone I/IIA by SECDEF on 5 OCT 1983. The program underwent a major restructuring in SEP 1985, resulting in two separate combat systems, AN/BSY-1 and AN/BSY-2. The restructured program was approved by Secretary of Defense Decision Memorandum (SDDM) of 16 May 1986. A Conventional Systems Committee review was held on 28 NOV 1989. An Acquisition Decision Memorandum (ADM) was signed on 22 DEC 1989 by the Defense Acquisition Executive (DAE), approving procurement of the last shipset in FY90 and the Software Maintenance Facility (SMF) in FY91. All 23 shipsets, all trainers, and the SMF have been approved for production. Full scale development is complete. TECHEVAL and OPEVAL are complete.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --

AN/BSY-1 is a successful, mature program with no significant programmatic decisions remaining. This is the final AN/BSY-1 SAR. The program is more than 90% expended and more than 90% of the procurement quantities have been delivered.

o The "TECH/OPEVAL Data Review" was conducted and Director of Operational Test and Evaluation (DOT&E) concurrence obtained.

o Test and Evaluation: The initial phase of Follow-on Operational Test and Evaluation (FOT&E) of the AN/BSY-1 with Engineering Change Instructions (ECIs) 008 and 009 installed, during ICEX 1-93, will complete the evaluation of AN/BSY-1 under-ice navigation capabilities which were not tested during OPEVAL.

The final phase of FOT&E is planned for August 1993 to validate correction of maintainability and reliability deficiencies identified during TECHEVAL and OPEVAL. Successful completion of FOT&E will conclude required testing of this ACAT IC program.

o Logistics Requirements and Readiness Objectives and Funding: Expect Logistics Review Group (LRG) audit findings to be closed by August 1993.

o Cost, Schedule, Contracts and Production: An additional 6 systems, totaling 24 of 25 (23 shipsets, 1 Maintenance Trainer, 1 Software Maintenance Facility), have been accepted by the Navy since the last SAR. The remaining one is on schedule to meet the Builder's Delivery Date.

o This system will satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently performance breaches to the Acquisition Program Baseline (APB), dated 17 December 1992, in the areas of warm start of either CC or A and meantime to repair hardware that have been corrected by engineering changes. There are no Nunn McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones —

	Development Estimate	Approved Program	Current Estimate
Program Initiated (MENS Approved)	NOV 80	NOV 80	NOV 80
Milestone I (DSARC) Approve Design Definition SUBACS A & Concept Development SUBACS B	SEP 83	SEP 83	SEP 83
Milestone II (DSARC) Approve FSD SUBACS Basic	SEP 83	SEP 83	SEP 83
Award FSD Contract SUBACS Basic	OCT 83	DEC 83	DEC 83
Milestone II (DSARC) Approve Concept Definition FY88 CS	SEP 85	SEP 85	SEP 85
DoD AN/BSY-1 Program Review	N/A	MAR 86	MAR 86
DoD AN/BSY-1 Program Review	OCT 86	MAY 88	OCT 87
DoD AN/BSY-1 Program Review	OCT 87	MAY 89	NOV 88
SSN 751 Delivery	JUN 88	JUN 88	JUN 88
DoD AN/BSY-1 Program Review	N/A	NOV 89	NOV 89
Start TECH/OPEVAL AN/BSY-1	JAN 89	APR 90	APR 90
Review of TECH/OPEVAL Results	OCT 89	NOV 91	FEB 92
IOC	MAR 90	JUL 91	JUL 91

b. (U) Previous Change Explanations —

Changes reflect shipyard and program schedule slips for AN/BSY-1(V). Extended AN/BSY-1 TECH/OPEVAL start date due to delayed issue of OPEVAL report (16 OCT 91). IOC demonstrated 15 JUL 91 with deployment of AN/BSY-1 in USS PASADENA (SSN-752).

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:
DCP, dated 15 November 1985.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 17 December 1992.

10. (U) **Performance Characteristics:**

a. (U) Performance —

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)	[redacted]	[redacted]	[redacted]	[redacted]

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)	[redacted]			

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --

Reflect earlier changes in the AN/BSY-1(V) TEMP.

Measured during AN/BSY-1(V) TECH/OPEVAL - within TEMP thresholds.

FOM considered satisfactory, since result is within measurement error tolerance.

Required ambient noise condition for accurate IKA FOM measurement unachievable. Performance evaluation procedures changed to be consistent with those used by submarines prior to deploying for Arctic operations. Threshold change approved based on this revised procedure.

There are essentially no changes in FLIT/MATE capabilities included in AN/BSY-1(V) over those present in all (prior) OCS Mk 1 variants. Differences are driven by target geometries, test ship maneuvers, operation responses, and environmental conditions. Standard test methodology and execution are virtually impossible to achieve. It is expected that a crew's nominal time to achieve a solution will decrease with increased experience. AN/BSY-1(V) system FLIT/MATE TMA performance evaluated as satisfactory.

Threshold subject to a number of in-situ variables which impact results. Performance to be subjectively evaluated based on in-situ conditions. Threshold change to "unthresholded" approved.

Incorporation of Post-TECHEVAL Update in the system has improved performance. Achievement of threshold has been demonstrated during laboratory testing of the change.

Inclusion of 150 microprocessors make previous threshold inappropriate. Significant improvement noted in laboratory testing of Post-TECHEVAL Update. Threshold change to 6 hours approved.

Discrepancy due to (a) recorded repair times were inflated by inclusion of logistics delay time, (b) intermittent faults increased localization times, (c) recorded repair times were rounded up to the nearest hour. Improvements incorporated in both Post-TECHEVAL and Post-OPEVAL Updates. Satisfactory performance (21 minutes) demonstrated under controlled laboratory conditions (Maintenance Demonstration in Developmental Testing).

False Alarm/# of detections not an accurate indicator of function quality. Same false alarm may reappear each time as th PM cycles through testing the system. Threshold change to "98% of PMs free of

10b. (U) Performance Characteristics (Cont'd):
false alarms" approved.

Preventive maintenance for AN/BSY-1(V) Combat Control subsystem exceeded threshold by .7 hr/week. This does not adversely impact the crew or ship's ability to perform her mission. Threshold change to 5 hours/week approved.

c. (U) Current Change Explanations —

CH-1 Longevity of Acoustics was observed to be 100 hrs during land based testing of Engineering Change Instruction (ECI) 009. Similarly the longevity of Combat Control was measured at 125 hrs. An FOT&E (OT-IIIB) of AN/BSY-1 at ECI 009 level will start in June 1993. At-sea performance is expected to meet the Objective/Threshold.

CH-2 Performance was demonstrated during At-Sea testing of ECI 009 from 30 June to 1 July 1992.

CH-3 Number used reflects a laboratory environment. Values under Demonstrated Performance and Current Estimate are based on results of a Maintenance Demonstration conducted under controlled laboratory conditions. Logistic delay times were not included in baseline or performance. OT-IIIB starting in June 1993 will evaluate RMA. At-sea performance is expected to meet the Objective/Threshold.

d. (U) References —

(U) Development Estimate:
Development Estimate: DCP, dated 15 November 1985

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 17 December 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	2027.5	1125.7	1088.0
Procurement	944.9	2407.4	256.0
Peculiar Support	(944.9)		(256.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	2972.4	3533.1	1344.0

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	855.2	551.9	162.5
Development (RDT&E)	(319.4)	(80.7)	(81.3)
Procurement	(535.8)	(471.2)	(81.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3827.6	4085.0	1506.5

b. (U) Quantity —

Development (RDT&E)	0	N/A	0
Procurement	0	24	0
Total	0	24	0

Production systems ("Approved Program Procurement") for new construction ships are procured under SCN appropriations and reported in the SSN 688 SAR under the cognizance of NAVSEA (PMS393). Only procurement of Organic Depot, MSRA TPS, System Improvements, Trainers and End of Life Buys ("Current Estimate Procurement") are reported in the AN/BSY-1 SAR submitted by the PEO Submarines.

c. (U) Foreign Military Sales/International Cooperative Programs — None.

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Development Estimate:
DCP, dated 15 November 1985

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 17 December 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1506.5	1570.6	1506.5
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

b. (U) Current Procurement ---	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	30.5	30.5	10.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	30.5	30.5	10.1
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2346.9	1480.7	0.0	3827.6
Previous Changes:				
Economic	-51.8	-29.0	-	-80.8
Quantity	-62.1	-	-	-62.1
Schedule	+15.5	-	-	+15.5
Engineering	+34.0	-	-	+34.0
Estimating	-25.2	-	-	-25.2
Other	-1050.9	-	-	-1050.9
Support	-	-1087.5	-	-1087.5
Subtotal	-1140.5	-1116.5	-	-2257.0
Current Changes:				
Economic	-	-8.7	-	-8.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-37.1	-	-	-37.1
Other	-	-	-	-
Support	-	-18.3	-	-18.3
Subtotal	-37.1	-27.0	-	-64.1
Total Changes	-1177.6	-1143.5	-	-2321.1
Current Estimate	1169.3	337.2	-	1506.5

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2027.5	944.9	0.0	2972.4
Previous Changes:				
Quantity	-57.0	-	-	-57.0
Schedule	+13.2	-	-	+13.2
Engineering	+29.6	-	-	+29.6
Estimating	-21.1	-	-	-21.1
Other	-866.5	-	-	-866.5
Support	-	-676.3	-	-676.3
Subtotal	-901.8	-676.3	-	-1578.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-37.7	-	-	-37.7
Other	-	-	-	-
Support	-	-12.6	-	-12.6
Subtotal	-37.7	-12.6	-	-50.3
Total Changes	-939.5	-688.9	-	-1628.4
Current Estimate	1088.0	256.0	-	1344.0

b. (U) Previous Change Explanations —

RDT&E
Economic: Revised escalation Indices
Quantity: Removed Engineering Development Model and Land Based Test Site
Schedule: Rephasing of chassis and software boot development (CC/A)
Engineering: ECPs to the Combat Control/Acoustic Subsystem Submarine Active Detection Sonar Group (TG) and High Frequency Transmitter (HFT); AN/UYK-43 rearchitecture; revised TECH/OPEVAL support; upgrade of C4.1 software boot; changes to CC/A configuration; increased OPEVAL support
Estimating: Software, Basic Operator Trainer (BOT) and Weapons

13b. (U) Cost Variance Analysis (Cont'd):

Launch System Operator Trainer (WLSOT) cost growth; -$21M correction from previous SAR administrative effort; CC/A, TG and BFT overrun projections; revised funding for TECH/OPEVAL support; prior year adjustment; Team Trainer Development adjustment.

Other: Separation of the AN/BSY-1 from the AN/BSY-2

Procurement

Economic: Revised Escalation Indices

Quantity: Addition of MSRA, Team Trainers and associated spares to support an increased number of operational systems; Recategorization to previous SARs.

Schedule: Change of backfit equipment and earlier deliveries to meet accelerated shipbuilding schedule; Recategorization to previous SARs.

Engineering: Configuration changes to enhance capability and recategorization to previous SARs.

Estimating: Increase in product improvement and overhaul material needs; loss of Software Maintenance Facility due to budget cuts; decrease in number of spares for Maintenance Assisted Modules (MAMs) and Installation and Checkout (I&C); restoration of Software Maintenance Facility (SMF); loss of 2 Team Trainers; additional funding for Wide Aperture Array (WAA) backfits; decrease in product improvement needs; increase in Module Screening and Repair Activity (MSRA) requirements; transfer of funding for Wide Aperture Array (WAA) backfit to AN/BSY-2 program; increase in Organic Depot and MSRA requirements.

Other: Separation of the AN/BSY-1 and AN/BSY-2; Recategorization to previous SARs.

Support: Recategorization to previous SARs; redefinition of support requirements for trainers and spares; adjustments to MSRA/TPSs, Organic Depot, SMF/GFE, TT/BOT Upgrade, Spares and System Improvements.

c. (U) Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	N/A	—

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Revised prior year program to actuals (Estimating)	-37.7	-37.1
RDT&E Subtotal	-37.7	-37.1
(2) Procurement		
Revised escalation indices (Economic)	N/A	-8.7
Adjustment to MSRA/TPSs, Organic Depot, SMF, TT/BOT Upgrade, Spares, and System Improvements. (Support)	-12.6	-18.3
Procurement Subtotal	-12.6	-27.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not Applicable.

15. (U) Contract Information: None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status —

(1) Percent Program Completed: 73.3% (11 yrs/15 yrs)

(2) Percent Program Cost Appropriated: 95.7% ($1441.6 / $1506.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-97)	Total
RDT&E	1169.3	-	-	-	1169.3
Procurement	272.3	10.1	21.9	32.9	337.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1441.6	10.1	21.9	32.9	1506.5

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1983				203.8	200.4	200.4	200.4	4.9
1984				126.8	129.2	129.2	129.2	3.8
1985				174.3	183.1	183.1	183.1	3.4
1986				184.5	199.4	199.4	199.4	2.8
1987				188.6	209.9	209.9	209.9	2.7
1988				115.6	133.0	133.0	133.0	3.0
1989				72.8	87.3	87.3	87.3	4.2
1990				20.0	24.9	24.9	24.9	4.0
1991				1.6	2.1	2.1	2.1	4.3
Subtot				1088.0	1169.3	1169.3	1169.3	
Appropriation: 1810 Other Procurement, Navy								
1986				0.5	0.6	0.6	0.6	2.8
1987				41.4	48.1	48.1	48.1	2.7
1988				38.4	46.7	46.7	46.7	3.0
1989				1.0	1.2	1.2	1.2	4.2
1990				6.4	8.4	8.4	8.4	4.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1991				69.5	92.2	87.8	62.9	4.3
1992				32.8	44.6	35.8	25.0	2.8
1993				21.9	30.5	21.5	0.4	2.4
1994				7.1	10.1			2.4
1995				15.0	21.9			2.3
1996				20.8	31.0			2.3
1997				1.2	1.9			2.2
Subtot				256.0	337.2	250.1	193.3	
Grand Total				1344.0	1506.5	1419.4	1362.6	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	10.1	0.0	-10.1	-10.1
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	21.9	0.0	-21.9	-21.9
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	32.9	0.0	-32.9	-32.9

Note: Procurement quantities for this program are reported in the platform program SARs.

c. (U) Deliveries (Plan/Actual) — None.

d. (U) Approved Design-to-Cost Objective — N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules — None

b. (U) Costs — None.

c. (U) Contractor Support Costs — (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M,N	44.1	6.9	7.5	22.2	80.7
Total	44.1	6.9	7.5	22.2	80.7

A-30 TOW 2

92-101

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: TOW 2

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 25 1993
5
[redacted]
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Tube-Launched Optically-Tracked Wire-Guided (TOW 2) Weapon System

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
Program Executive Officer, Fire Supp COL JACK D. CONWAY
ATTN: SFAE-FS-TO Assigned: January 15, 1991
RSA, AL 35898-5701 AV 746-7194 COMM 205-876-7194

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 23802 Project D051, D336

Concur in Classification as marked
2 [redacted] 1993
[redacted] REVIEW, JDCSINT, HQDA
OASD(PA) DFOISR 93-C-658

[redacted]

[redacted]

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 2032 ICN C59300 (Army)
APPN 2032 ICN C59800 (Army)
APPN 2032 ICN C61700 (Army)
APPN 2032 ICN CA0253 (Army)
APPN 2032 ICN CA0258 (Army)
APPN 2035 ICN BL5295 (Army)
APPN 2035 ICN K42500 (Army)

5. (U) Related Programs:
None.

6. (U) Mission and Description:

The TOW 2 weapon system is an upgrade of the basic TOW system necessitated by existing and postulated future threats. The basic TOW (tube-launched, optically tracked, wire-guided) system is a vehicle-mounted or crew-portable, heavy anti-tank, assault weapon system designed to attack and defeat armored vehicles and other targets such as field fortifications. Concurrent with lethality improvements, the TOW 2 system hardens against obscurants and electro-optical countermeasures which enables the system to be effectively employed in all weather conditions to engage tanks, other armored vehicles, bunkers, crew-served weapons and has a limited self defense capability against helicopters. The launcher consists of a launch tube, traversing unit, optical sight, night sight, missile guidance set, battery assembly, tripod, overpack shroud and carrying strap. The missile is encased in a disposable launch container. The TOW system has been incorporated into the improved TOW vehicle (ITV), the high mobility multipurpose wheeled vehicle (HMMWV), the M151 jeep, the armored personnel carrier, and the U.S. Marine Corps (USMC) light armored vehicle (LAV). The TOW subsystems on the Bradley Fighting Vehicle Systems are separately funded by that project manager (PM) and managed by the TOW PM by agreement. The TOW subsystem on the COBRA aircraft is funded by the COBRA Project Manager and managed by the U.S. Army Missile Command (MICOM) Weapon System Management Directorate by agreement. The missiles and Research, Development, Test & Evaluation (RDT&E) programs related to missile improvements for all platforms are funded in the TOW line and managed by the TOW PM.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --

The TOW 2 missile contract was developed under a product improvement program initiated in 1979. TOW 2A is an enhancement to the TOW 2 missile initiated in December 1984 to counter the reactive

7a. (U) Program Highlights (Cont'd):

applique armor threat. The effort added a tip charge to the probe, a redesigned safe and arming device and an electronic timing device to provide delay between the tip and main charge functions. Additional ballast was added to the aft end of the missile to accommodate the extra weight resulting from the probe improvements. Acquisition of TOW 2A was accomplished as an Engineering Change Proposal to the missile production line beginning with the FY 86 buy. The TOW 2B fly-over shoot-down missile version development contract was awarded 24 September 1987. Production of TOW 2B was cut into the TOW 2A contract by an Engineering Change Proposal on 21 December 1990 (2406 missiles). Funding cuts in the FY 91 RDT&E and FY92-94 modification program required deletion of the Alternate TOW 2B effort. The Improved Target Acquisition System (ITAS) was reviewed by the Army Staff in January 1992 and received approval as an ACAT III program from the Army Acquisition Executive (AAE) on 29 January 1992.

b. (U) Significant Developments Since Last Report --

All issues were successfully resolved on the TOW 2B environmental characterization testing on the suspect timing crystal that contributed to decreased reliability and baseline schedule breach. The Deputy Under Secretary of the Army for Operations Research approved TOW 2B for production with the proven 4-post crystal design on 13 July 1992. The U.S. Army Missile Command, Materiel Release Review Board, approved a full unconditional release for all ground launch platforms on 30 July 1992.

TOW Improved Target Acquisition System (ITAS), Request for Proposal (RFP) was released on 27 October 1992. It was reviewed by U.S. Army Materiel Command (AMC) and by the Roadshow II Team on-site at Redstone Arsenal, AL, 3-5 November 1992. The TOW ITAS user/developer requirements clarification Memorandum of Agreement (MOA) was completed on 23 October 1992. TOW ITAS Pre-proposal conference was conducted 17 November 1992. The Milestone II, In-Process Review, was completed on 11 December 1992.

The TOW 2B sensor educational buy contract was awarded to Loral Corporation, Archbald, PA on 24 December 1992. Total award amount was $9,979,251. Production quantities of 1,592 sensors are scheduled for delivery starting 24 December 1993 through 22 January 1994.

The TOW 2 system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

ITAS proposals were received 4 January 1993. The Test and Evaluation Master Plan (TEMP) has been approved by U.S. Army Training & Doctrine Command, the U.S. Army Operational Test & Evaluation Command and the Department of Army and has been forwarded to the Office of Secretary of Defense for approval.

8. (U) **Threshold Breaches:**

There are no schedule breaches to the approved Acquisition Program Baseline (APB), dated February 16, 1993. There is a program acquisition unit cost Nunn-McCurdy breach because of the addition of ITAS. Detailed information on the unit cost breach is provided in section 12.

9. (U) **Schedule:**

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
TOW 2			
Program Go Ahead	SEP 78	N/A	SEP 78
R&D Contract Award	AUG 79	AUG 79	AUG 79(Ch-1)
DT/OT Test			
Start	N/A	MAY 81	MAY 81
Complete	N/A	JUL 81	JUL 81
DA IPR (Production Approval)	SEP 81	SEP 81	SEP 81
Initial Production Contract Award	DEC 81	DEC 81	DEC 81
Production Contract Deliveries Begin (missile)	N/A	JAN 83	JAN 83
Initial Operational Capability (IOC)	SEP 83	SEP 83	SEP 83
Production Contract Deliveries Complete	N/A	APR 87	APR 87
TOW 2A			
Engineering Development Begin	N/A	JAN 84	JAN 84
Qualification Test Begin	N/A	APR 86	APR 86
Qualification Test Complete	N/A	JUL 86	JUL 86
Initial Production Contract Award	N/A	AUG 86	AUG 86
Warhead Cut-In	N/A	MAY 87	MAY 87
Production Contract Deliveries Begin - FY86 Buy	N/A	JUN 87	AUG 87
FY 87 Production Contract Award	N/A	AUG 87	AUG 87
IOC	N/A	SEP 87	SEP 87
Second Source Educational Buy Contract Award	N/A	AUG 89	JUL 89
Production Contract Deliveries Complete-FY90 (1 month delivery)	N/A	AUG 92	DEC 92(Ch-2)
TOW 2B			
R&D Contract Award	N/A	SEP 87	SEP 87
DT/OT Test Complete	N/A	APR 90	OCT 90
DA IPR (Production Approval)	N/A	JUN 90	NOV 90
IOC	N/A	OCT 92	OCT 92(Ch-3)
TOW 2 Retrofit			

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Phase I Missile Deliveries	N/A	SEP 92	MAR 91
TOW Sight Improvement Program (TSIP)			
Program Go-Ahead	N/A	MAY 89	MAY 89
ASARC V	N/A	FEB 91	JUL 91
TOW ITAS			
Program Go Ahead	N/A	JAN 92	JAN 92(Ch-4)
Milestone II	N/A	NOV 92	NOV 92(Ch-4)
EMD Contract Award	N/A	APR 93	APR 93(Ch-4)

b. (U) Previous Change Explanations --

Previous changes which have affected schedule milestones include new milestones resulting from APB dated February 26, 1990, and cancellation of TOW 2 Retrofit Phase II. In addition, the TOW 2B DT/OT schedule slip from April 1990 to October 1990 has affected schedule milestones along with the slip to the IOC. TOW 2A Second Source effort was terminated by Office of Secretary of Defense. TOW Sight Improvement Program was terminated by direction of Secretary of the Army.

c. (U) Current Change Explanations --

(Ch-1) The actual date of the TOW 2 R&D contract award was Aug 79 not Aug 81 as had been previously reported.

(Ch-2) Approval was received for the resumption of TOW 2A deliveries; delivery was completed 24 December 92. The date changed from N/A to Dec 92.

(Ch-3) Confirmation testing of corrective actions was completed and approval for resumption of TOW 2B production was given. The date changed from TBD to Oct 92.

(Ch-4) ITAS was added to the Acquisition Program Baseline which was approved February 93.

d. (U) References --

(U) Production Estimate:
IPR approved by HQDA message, DAMA-WSM-S, dated 9 Oct 1981.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 16 February 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Weight (lbs)					
TOW 2					
Missile Weight Only	N/A	48	/ 48	48	48
Msl Weight (Tactical missile in container) (lbs)	63.4	63.4	/ 63.4	63.4	63.4
Launcher Weight (including night vision sight & batteries) (lbs)	216	216	/ 216	216	216
System Ready to Fire (lbs)	276	279.4	/ 279.4	279.4	279.4
TOW 2A					
Missile Weight Only (lbs)	N/A	49.8	/ 49.8	47.0	47.0
Msl Weight (Tactical missile in container) (lbs)	N/A	64.5	/ 64.5	61.7	61.7
Launcher Weight (including night vision sight & batteries) (lbs)	N/A	216	/ 216	216	216
System Ready to Fire (lbs)	N/A	280.5	/ 280.5	277.7	277.7
TOW 2B					
Missile Weight Only (lbs)	N/A	49.8	/ 51.0	49.4	49.4
Msl Weight (Tactical missile in container) (lbs)	N/A	64.5	/ 65.7	64.1	64.1
Launcher Weight (including night vision sight & batteries) (lbs)	N/A	216	/ 216	216	216
System Ready to Fire (lbs)	N/A	280.5	/ 281.7	280.1	280.1
Range (meters)					
TOW 2/TOW 2A					
Minimum (M)	65	65	/ 65	65	65

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Maximum (M)	3750	3750	/ 3750	3750	3750
TOW 2B					
Minimum (M) 1/	N/A	65	/ 400	200	200
Maximum (M)	N/A	3750	/ 3750	3750	3750
System Reliability %					
TOW 2/TOW 2A missile with launcher	91.6	95	/ 91.6	91.6	95
TOW 2B missile with launcher	N/A	95	/ 91.6	82.9	91.6

(b)(1)

[redacted]

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --

Previous changes include improvements to the warhead approved through Product Improvement Programs (PIPs) which increased missile weight. Also, TOW 2A, TOW 2B, and Alternate TOW 2B performance characteristics added based on APB dated February 26, 1990. The incorporation of the Digital Electronics Unit (DEU) resulted in decreases to the missile weight. The Alternate TOW 2B effort was deleted due to funding cuts.

c. (U) Current Change Explanations --

(CH-1) The high Pk numbers are based on pre-TOW Accuracy Study probability of hit while the low numbers are based on the AMSAA TOW Accuracy Study probability of hit (AMSAA letter dated 11 Jan 93). Targets are fully exposed, 2,000 m range.

(CH-2) ITAS was added to the Acquisition Program Baseline which was approved 16 February 1993.

d. (U) References --

(U) Production Estimate:
IPR approved by HQDA message, DAMA-WSM-S, dated 9 Oct 1981.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 16 February 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	107.0	310.8	307.5
Procurement	2195.1	2598.8	2572.9
Heat Missile	(1299.3)		(1520.3)
Launcher	(7.0)		(0.0)
AN/TAS4/4A Night Sight	(363.2)		(237.1)
Ground Spt Retrofit	(325.8)		(615.0)
Night Sight Retrofit	(26.1)		(23.0)
Total Flyaway	(2021.4)		(2395.4)
Other Weapon Systems	(103.3)		(75.6)
Peculiar Support	(48.9)		(31.7)
Initial Spares	(21.5)		(70.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	2302.1	2909.6	2880.4

11a. (U) Total Program Cost and Quantity (Cont'd):

	Production Estimate	Approved Program	Current Estimate
Escalation	321.7	572.4	525.4
Development (RDT&E)	(-15.7)	(50.7)	(45.8)
Procurement	(337.4)	(521.7)	(479.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2623.8	3482.0	3405.8
b. (U) Quantity --			
Development (RDT&E)	113	113	213
Procurement	141224	147358	142879
Total	141337	147471	143092

Quantities reflect TOW 2, TOW 2A and TOW 2B - only TOW 2A and TOW 2B will defeat current threat targets.

(b)(1)

[redacted]

(b)(1)

[redacted]

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
IPR approved by HQDA message, DAMA-WSM-S, dated 9 Oct 1981.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 16 February 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3405.8	3149.6	3405.8
(2) Quantity	143092	154082	143092
(3) Unit Cost	0.024	0.020	0.024
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	196.8	196.8	32.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	196.8	196.8	32.5
(2) Quantity	8900	8900	0
(3) Unit Cost	0.022	0.022	N/A

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY84$)	2880.4	2704.2	2880.4
(2) Unit Cost	0.020	0.018	0.020

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY84$)	140.9	140.9	22.8
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	140.9	140.9	22.8
(2) Unit Cost	0.016	0.016	N/A

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.004	20.00
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-10990	-7.13
(4) PAUC (BY84$)	0.002	11.11
(5) CPUC (BY84$)	0.000	N/A

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.004	20.00
(2) CPUC (TY$)	0.000	0.00
(3) PAUC Quantity	-10990	-7.13
(4) PAUC (BY84$)	0.002	11.11
(5) CPUC (BY84$)	0.000	0.00

g. (U) Initial SAR (SEP 81)

(1) Program Acquisition Cost (TY$) -- 914.7
(2) Program Acquisition Cost (BY$) -- 2089.2

h. (U) Unit Cost Changes.

(1) (U) PAUC --

The TOW ITAS modification program was included in the APB signed 16 February 1993 resulting in an increase to the program. The FY94 production was zeroed out with funds allocated for shut-down.

(2) (U) CPUC -- None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

None. The deletion of the FY94 production buy has no impact on the contracts reported in this SAR. The EMD contract for ITAS has not been awarded at this time.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

j. (U) Program Management and Control.

The Program Executive Officer is Mr. George G. Williams and the TOW Program Manager is COL Jack D. Conway.

k. (U) Cost Control Actions.

The unit cost increase is a result of the addition of the ITAS requirement and the deletion of the FY94 production buy. The existing cost control actions are believed to be adequate.

1. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): Hughes Aircraft Co.
(2) Contract Title: TOW MISSILE
(3) Contract Number:DAAH01-90-C-0171
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): 0.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/92	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

There are no impacts to this FFP contract because cost & schedule variance reporting is not required.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): Hughes Electro Optical Op
(2) Contract Title: TOW 2 SUBSYSTEMS
(3) Contract Number:DAAH01-90-C-0369
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): 0.00

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/92	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

There is no impact to this FFP contract because cost and schedule variance reporting is not required.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): HUGHES AIRCRAFT COMPANY
(2) Contract Title: FY92 TOW 2 MISSILE
(3) Contract Number:DAAH01-92-C-0260
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): 0.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/92	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

There is no impact to this FFP contract because cost and schedule variance reporting is not required.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	91.3	2532.5	0.0	2623.8
Previous Changes:				
Economic	-0.4	-54.8	-	-55.2
Quantity	-	+365.9	-	+365.9
Schedule	-	+129.4	-	+129.4
Engineering	+162.5	+65.3	-	+227.8
Estimating	+2.9	-134.5	-	-131.6
Other	-	-	-	-
Support	-	-10.5	-	-10.5
Subtotal	+165.0	+360.8	-	+525.8
Current Changes:				
Economic	-4.7	-16.6	-	-21.3
Quantity	-	-131.7	-	-131.7
Schedule	-	-78.2	-	-78.2
Engineering	+98.6	+275.2	-	+373.8
Estimating	+3.1	+93.2	-	+96.3
Other	-	-	-	-
Support	-	+17.3	-	+17.3
Subtotal	+97.0	+159.2	-	+256.2
Total Changes	+262.0	+520.0	-	+782.0
Current Estimate	353.3	3052.5	-	3405.8

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	107.0	2195.1	0.0	2302.1
Previous Changes:				
Quantity	-	+253.3	-	+253.3
Schedule	-	+40.5	-	+40.5
Engineering	+130.5	+93.7	-	+224.2
Estimating	+2.0	-111.4	-	-109.4
Other	-	-	-	-
Support	-	-6.5	-	-6.5
Subtotal	+132.5	+269.6	-	+402.1
Current Changes:				
Quantity	-	-87.7	-	-87.7
Schedule	-	-23.8	-	-23.8
Engineering	+69.2	+150.5	-	+219.7
Estimating	-1.2	+58.9	-	+57.7
Other	-	-	-	-
Support	-	+10.3	-	+10.3
Subtotal	+68.0	+108.2	-	+176.2
Total Changes	+200.5	+377.8	-	+578.3
Current Estimate	307.5	2572.9	-	2880.4

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Engineering: Enhancement to the TOW 2 Warhead (TOW 2B) and the TOW Sight Improvement Program (TSIP). Termination of the Alternate TOW 2B Program and TOW Sight Improvement Program (TSIP).
Estimating: Changes to reflect current data.

Procurement
Economic: Revised escalation indices.
Quantity: Fluctuation in quantity of TOW 2 Missiles.
Schedule: Stretch-out of missile procurements.
Engineering: Funding of approved PIP's, enhancement to TOW 2

13b. (U) Cost Variance Analysis (Cont'd):

Warhead. Termination of the Alternate TOW 2B Program and TSIP.

Estimating: Changes to reflect current data.

Support: Changes in Support Equipment requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.2
Incorporation of ITAS (Engineering)	+64.0	+91.0
Improvement to TOW Whd (Engineering)	+5.2	+7.6
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
Changes due to cost estimating update to reflect most recent data (Estimating)	-1.4	-1.6
Correction to prior variances to reconcile economic costs (Economic)	N/A	-4.5
Correction to prior variances to reconcile economic costs (Estimating)	N/A	+4.5
RDT&E Subtotal	+68.0	+97.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-19.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+12.8
Total Variance associated with decrease of 10990 units.	-166.6	-249.6
Quantity Variance resulting from decrease of 10990 units. (Quantity)	-87.7	-131.7
Schedule Variance associated with quantity decrease. (Schedule)	-23.8	-78.4
Engineering Variance associated with quantity decrease. (Engineering)	-55.1	-39.5
Change in procurement buy schedule. (Schedule)	--	+0.2
Improved Target Acquisition System (Engineering)	+183.6	+283.6
Incorporated Block 92 Improvement (Engineering)	+8.4	+11.8
Retrofit TOW 2 to TOW 2A missiles (Engineering)	+13.6	+19.3

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for Current & Prior Inflation. (Estimating)	+7.8	+10.6
Revised procurement and application costs for modifications (Estimating)	+25.9	+37.2
Changes due to cost estimating update to reflect most recent data (Estimating)	+25.2	+35.5
Adjustment for Current & Prior Inflation. (Support)	+0.3	+0.3
Increase in Initial Spares requirement (Support)	+14.7	+23.1
Decrease in Other Weapon System Cost (Support)	-4.7	-6.1
Correction to prior variances to reconcile economic costs (Economic)	N/A	-9.9
Correction to prior variances to reconcile economic costs (Estimating)	N/A	+9.9
Procurement Subtotal	+108.2	+159.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.019	-0.001	0.002	--	0.004	--	--	--	0.005	0.024

15. (U) Contract Information (Then-Year Dollars in Millions):

Cost and schedule variance reporting is not required for these FFP contracts.

a.(U) Procurement -- (U) TOW MISSILE:	Target	Initial Contract Price Ceiling	Qty
Hughes Aircraft Co., Tucson, AZ DAAH01-90-C-0171, FFP Award: N/A Definitized: February 1, 1990	$394.7	N/A	19797

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$394.7	N/A	19797	$394.7	$394.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

(U) TOW 2 SUBSYSTEMS:
Hughes Electro Optical Op, Manhattan Beach, CA
DAAH01-90-C-0369, FFP
Award: N/A
Definitized: September 28, 1990

Initial Contract Price		
Target	Ceiling	Qty
$111.7	N/A	1200

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$111.7	N/A	1200	$111.7	$111.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

(U) FY92 TOW 2 MISSILE:
HUGHES AIRCRAFT COMPANY, TUCSON, AZ
DAAH01-92-C-0260, FFP
Award: May 29, 1992
Definitized: May 29, 1992

Initial Contract Price		
Target	Ceiling	Qty
$237.0	N/A	10000

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$237.0	N/A	10000	$237.0	$237.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change: None.

15. (U) Contract Information (Cont'd):
This is the first time this contract has appeared in the SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 66.7% (16 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 85.6% ($2916.1 / $3405.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2001)	Total
RDT&E	254.7	37.5	33.2	27.9	353.3
Procurement	2661.4	32.5	24.4	334.2	3052.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2916.1	70.0	57.6	362.1	3405.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1978				8.0	5.3	5.3	5.3	11.1
1979				13.9	10.3	10.3	10.3	12.6
1980				31.9	25.7	25.7	25.7	11.4
1981				25.3	22.5	22.5	22.5	7.6
1982				6.5	6.1	6.1	6.1	7.6

16c. (U) Program Funding Summary (Cont'd):

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
1983				2.2	2.2	2.2	2.2	4.9
1984				4.7	4.8	4.8	4.8	3.8
1985				11.3	11.9	11.9	11.9	3.4
1986				9.7	10.5	10.5	10.5	2.8
1987				5.7	6.3	6.3	6.3	2.7
1988				17.6	20.4	20.4	20.3	3.0
1989				20.5	24.7	24.6	24.6	4.2
1990				43.1	53.9	53.7	51.1	4.0
1991				13.1	17.0	16.6	13.7	4.3
1992				24.8	33.1	14.5	5.4	2.8
1993								2.4
1994				26.9	37.5			2.4
1995				23.3	33.2			2.3
1996				16.4	24.0			2.3
1997				0.9	1.4			2.2
1998				0.9	1.3			2.2
1999				0.8	1.2			2.2
Subtot	213			307.5	353.3	235.4	220.7	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2032 Missile Procurement, Army								
1981	3875		131.0	135.8	117.9	117.9	117.9	11.9
1982	10008		196.2	215.3	206.4	206.4	206.4	14.3
1983	12000		183.2	187.8	193.8	193.8	193.8	9.0
1984	18000		196.3	219.1	231.8	221.0	221.0	8.0
1985	12000		184.3	204.0	224.1	220.0	219.6	3.4
1986	12000		135.9	170.1	191.4	182.0	179.1	2.8
1987	9350		109.0	120.6	141.0	135.9	134.3	2.7
1988	12000	10.2	133.5	150.8	182.6	178.2	176.7	3.0
1989	13115	8.8	114.5	151.9	190.8	180.5	176.4	4.2
1990	7297		102.7	105.0	136.3	127.2	118.7	4.0
1991	14784		223.1	223.8	298.3	293.2	214.8	4.3
1992	9550		152.4	153.1	208.9	194.8	33.9	2.8
1993	8900		139.8	140.9	196.8	1.5	1.2	2.4
1994			20.1	22.8	32.5			2.4
1995			14.9	16.7	24.4			2.3
1996			33.9	33.9	50.6			2.3
1997			69.3	71.8	109.5			2.2
1998			61.3	67.5	105.1			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
1999			33.1	40.0	63.6			2.2
2000			1.7	1.8	2.9			2.2
2001			1.5	1.5	2.5			2.2
Subtot	142879	19.0	2237.7	2434.2	2911.2	2252.4	1993.8	

FY93 will be the last year for procurement of the TOW 2 missile. Costs for 1994 through 2001 reflect on-going modifications to the new end item (ITAS) and launcher along with costs for plant closure and sustainment through missile delivery completion.

Appropriation: 2035 Other Procurement, Army								
1981			29.0	29.0	27.8	27.8	27.8	11.9
1982			32.2	32.2	32.3	32.3	32.3	14.3
1983			43.7	43.7	45.3	45.3	45.3	9.0
1984			33.8	33.8	35.9	35.9	35.9	8.0
Subtot			138.7	138.7	141.3	141.3	141.3	
Grand Total	143092	19.0	2376.4	2880.4	3405.8	2629.1	2355.8	

Costs for 2035-Other Procurement Army reflect Night Sight procurements and modifications which were not major end items.

Expenditures and Obligations reflect program office records as of

16c. (U) Program Funding Summary (Cont'd):
December 31, 1992.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	32.5	0.0	-32.5	-32.5
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		24.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		334.2		N/A	N/A

Production of the TOW 2 missile will end in FY93. Costs for 1994 through 2001 reflect on-going modifications to the current end item and launcher along with costs for plant closure and sustainment through missile delivery completion.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	213/213
Procurement	122362/116058

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

O&S costs were obtained from a Baseline Cost Estimate (BCE) dated September 1991. Costs were presented in FY93 Constant dollars. Costs were calculated using OSD inflation guidelines dated 11 March 1993. The MICOM approved PICES Cost Model was used to develop the operations/sustainment cost estimates. O&S costs reflect full sustainment from 1981 - 2015 to include sustainment of existing and

18a. (U) Operating and Support Costs (Cont'd):
emerging TOW configurations. There is no antecedent program for TOW 2.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	TOW 2 Missile System	Avg Annual Cost Per Antecedent
Personnel less PCS	351.9	N/A
O&S Consummables	35.4	N/A
Direct Depot Maintenance	4.1	N/A
Sustaining Investment	18.8	N/A
Other Direct Costs	16.8	N/A
Indirect Costs	6.6	N/A
Total	433.6	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	9.4	---	---	---	9.4
Industrial Fund	---	---	---	---	---
Total	9.4	---	---	---	9.4

N-38 T-45TS

92-063

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: T45TS

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
(GOSHAWK)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
PEO (A) PMA 273
ARLINGTON, VA 22243-1273
AV 222-3375 COMM 703-692-3375

CAPT RICHARD KOEHLER
Assigned: June 15, 1989

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603208N Project H1142
PROCUREMENT:
APPN 1506 ICN 0017/0018 (Navy)
MILCON:
PE PROJ 236

No Security Objection to Open Publication
(AS AMENDED)
93-C-0407
MAY 25 1993
Office of the Chief of
Naval Operations Dept. of the Navy

5. Related Programs:
PE 0603216N Navy Aircrew Common Ejection Seat (NACES)
PE 0604203N Standard Attitude and Heading Reference System (SAHRS)

6. Mission and Description:
The T45TS is an integrated system designed to provide undergraduate jet pilot training for prospective Navy/Marine Corps pilots and

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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6. Mission and Description (Cont'd):

selected international students to meet aircrew requirements in the 1990's and beyond.

The T45TS consists of aircraft, simulators, academics, a training integration system (TIS) and contractor logisitics support. It is a derivative of the British Aerospace Hawk that has been adapted to provide the capability for carrier catapult take offs and arrested landings. The simulator suite includes both Instrument Flight Trainers (IFT) (device 2F137) and Operational Flight Trainers (OFT) (device 2F138). Academics include textbook materials, classroom aids and a computer-assisted instruction (CAI) (device 4E10) system. The TIS (device 4E9) utilizes existing hardware and software to provide scheduling and tracking of training events in order to achieve required training efficiency. Contractor logistics support has been structured to provide for future competition of maintenance support services to ensure that the system will be supported in the most cost effective manner. The T45TS will replace existing T-2C intermediate and TA-4J advanced jet trainer aircraft, simulators, and associated equipment.

7. Program Highlights:

a. Significant Historical Developments --

Development of the T45TS was initiated in 1975 to replace both the T-2B/C and TA-4J aircraft. A Mission Element Need Statement (MENS) was approved in 1979. In August 1980, contracts were awarded for the development/definition of two alternatives - a new design aircraft and an existing or derivative aircraft. In November 1981, the Navy announced Douglas Aircraft Company (DAC) as the winner of the competition to develop a training system based on a derivative of the British Aerospace HAWK aircraft. The Pre-FSD contract was awarded to DAC in September 1982 and the aircraft was designated the T-45A.

Following a Secretary of Defense Milestone I/II review in September 1984, a firm fixed price contract was signed on October 2, 1984 to initiate Full Scale Engineering Development. An Acquisition Decision Memorandum (ADM) was signed November 24, 1987 to procure the FY 1988 pilot production program of twelve T-45A aircraft, two flight simulators, a Training Integration System (TIS), an academic subsystem and the required integrated logistics support. The firm-fixed price contract option was definitized in December 1987. The first flight of the prototype aircraft occurred in April 1988.

DT/OT IIA testing in November 1988 revealed several aircraft performance deficiencies which the contractor worked to resolve during 1989. Further testing identified the need to redesign the wing with a full span moveable slat. Other significant aircraft improvements included an engine model upgrade and fuel control modifications.

Budget decisions restructured the program and reduced procurement quantities to the minimum sustaining production rate, accommodating

7a. Program Highlights (Cont'd):

the time necessary to fabricate and test all DT/OT IIA deficiency corrections. The December 1989 Defense Acquisition Board (DAB) approved program baseline changes and authorized continuation of pilot rate production.

In January 1990 McDonnell Douglas Corporation (MDC) formally announced its decision to move the T45TS program from the Douglas Aircraft Company in Long Beach, CA to McDonnell Aircraft Company in St. Louis, MO. This move was completed during the second half of 1990. The impact of the move and the time required to design and produce the aircraft corrections led to the decision to deliver the first two aircraft in late 1990 to be used in the flight test program and system integration testing.

In August 1990, McDonnell Douglas Corporation filed a claim against the Navy related to the FSD and the pilot production (FY 88) contracts. The claim centered on the design and production of the wing slats and engine change.

The T45TS program was again restructured in the budget process in order to further minimize development/production concurrency.

DT/OT IIB was conducted in December 1990 to evaluate all of the DT/OT IIA corrections. The DT and OT reports found that the aircraft exhibited satisfactory potential for its mission and the March 1991 OT IIB report recommended proceeding with limited production. A MS IIIA DAB review on 26 June 1991 released all advance procurement funding for the FY 92 LRIP aircraft (qty 12) but deferred final LRIP approval pending submission by Navy of a fully funded program and a revised program baseline. These conditions were met and a final ADM was received 10 April 1992. The fully funded program reflected an annual Pilot Training Rate of 450 at two strike training sites (NAS Kingsville, TX and NAS Meridian, MS) and included an approved aircraft cockpit upgrade to a digital electronic configuration (Cockpit 21). The aircraft satisfactorily completed DT/OT IIC in August 1991 and DT IID, including successful initial sea trials, in December 1991.

COMOPTEVFOR completed operational testing of the T45TS Academics subsystem at NAS Kingsville, TX in September 1991 and designated it "potentially suitable and effective". The Training Support Center (TSC), TIS, two IFT, and four OFT simulators were accepted by the Navy in 1991 and are operational at NAS Kingsville, TX to train the initial instructor cadre. The first delivery of a T-45A production aircraft to the training command (CNATRA) was in December 1991.

The FY 89/90/91 production contract was definitized on 7 February 1992. The contract price included 24 aircraft with new slatted wings, an upgraded engine, simulators, ILS support assets and tooling investment payments through FY 91. A development contract for the digital cockpit upgrade was awarded in May 1992. Development is planned over a three year period with production cut-in in FY 1995.

On 4 June 1992 a T-45A test aircraft (T001/BUNO 162787) had a

7a. Program Highlights (Cont'd):

landing mishap at Edwards AFB, CA. Uncommanded left brake pressure caused the aircraft to swerve and depart the runway, resulting in severe damage which was not economically repairable. The uncommanded brake pressure was caused by mechanical interference between the brake master cylinder and a flight test instrumentation bracket which is unique to the test aircraft. All aircraft were grounded pending accident investigation and deficiency correction. The flight test program was restructured and will be completed with the remaining two test aircraft. The grounding delay and extension of the test program caused a schedule breach to the program baseline which was reported in the September 1992 SAR.

b. Significant Developments Since Last Report --

The aircraft quantity for FY 94 was reduced in this budget to minimize near-term concurrency risk subsequent to the aircraft mishap. The maximum production rate was also reduced as a Navy affordability initiative. Also included in this budget is the breakout of the engine to GFE beginning in FY 94.

The current estimates for TECHEVAL, OPEVAL and MS III have been adjusted to accomodate expanded scope of testing for brakes, high angle of attack and engine operability.

Extension of the flight test program has been funded and the transfer of $25M from FY 92 APN to RDT&E has been completed as directed by Congress.

The digital cockpit upgrade for the T45TS, known as "Cockpit 21", is in development and progressing toward production incorporation into the first FY 1995 aircraft. Additionally, full retrofit into all remaining aircraft and simulators will begin in FY 1997. The Cockpit 21 development effort is fully funded in the RDT&E account, with forward-fit and retrofit fully funded in the procurement account. Milestones achieved to date include contract award of the development contract, completion of the System Design Review, Software Specification Review, and Preliminary Design Review. Critical Design Review is scheduled for May 1993.

The Navy is continuing its evaluation of the cost effectiveness of qualifying, integrating and testing an alternate engine leading to a possible competition with the current engine. Congressional funding has been provided to initiate the program but the balance of the program is unfunded. If the evaluation concludes the required initial investment will lead to significant life cycle savings, the Navy will be able to complete the qualification, integration, test and competition in time to incorporate the selected engine in the

7b. Program Highlights (Cont'd):

aircraft procured in FY 1996.

The T45TS is expected to satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline dated 27 April 1993. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Planning Estimate	Approved Program	Current Estimate
Program Initiated	JUL 75	JUL 75	JUL 75
Requirements Validation Study	MAR 78	MAR 78	MAR 78
MENS Approved	JUN 79	JUN 79	JUN 79
RFQ For Concept Definition	DEC 79	DEC 79	DEC 79
Project Charter Approved	AUG 80	AUG 80	AUG 80
ASE Studies Completed	MAR 81	MAR 81	MAR 81
Sustain Engr Contract Award	NOV 81	NOV 81	NOV 81
DEM/VAL Contract Award (Pre FSED)	SEP 82	SEP 82	SEP 82
Program Redirect (All Carrier Qual)	N/A	NOV 83	NOV 83
Advance Development Contract Award	N/A	JUL 84	JUL 84
Milestone I/II (DSARC)	N/A	SEP 84	SEP 84
FSED Letter Contract	SEP 84	SEP 84	SEP 84
Milestone IIIA Approval Pilot Prod (APP)	N/A	SEP 87	SEP 87
T45A First Flight	JAN 88	MAR 88	APR 88
Pilot Lot II FY 89	N/A	DEC 89	DEC 89
Milestone IIIA (ALRIP) FY92	N/A	NOV 91	APR 92
Complete Navy Tech Eval (NTE)	JAN 90	AUG 93	NOV 93(Ch-1)
Complete OPEVAL	JUN 90	DEC 93	FEB 94(Ch-1)
Initial Operational Capability	MAY 91	NOV 92	APR 93(Ch-2)
Milestone III Authorized Full Production	N/A	JUN 94	AUG 94(Ch-1)

b. Previous Change Explanations --

Since the beginning of the program the acquisition program baseline schedule has had to be adjusted for the following reasons: to recognize changes as a result of definitization of the development contract; late delivery of the flight test articles; delayed flight test schedule allowing for correction of the DT/OT IIA deficiencies; time required to design, test and produce the slatted wing

9b. Schedule (Cont'd):
configuration; restructuring of the program production quantities through the budget process; and the aircraft mishap. These adjustments have been incorporated and approved through three revisions to the Acquisition Program Baseline and were reported in greater detail in previous SARs.

c. Current Change Explanations --

CH-1 - The current estimates for TECHEVAL, OPEVAL and MS III have been adjusted to accomodate expanded scope for brakes, high angle of attack, and engine operability testing.

CH-2 - IOC is defined as delivery of the 12th production aircraft and ground training systems elements necessary to commence jet training. Production deliveries have been delayed due to the aircraft mishap and other technical difficulties which have been resolved. The delivery of the 12th aircraft occurred on April 14, 1993 which was within the program baseline threshold.

d. References --

Planning Estimate:
Draft SCP of January, 1984.

Approved Program:
DAE Approved Acquisition Program Baseline dated 27 April 1993.

10. Performance Characteristics:

a. Performance --

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Aircraft					
Wing Span (ft)	30.81	30.81	/ 30.81	N/A	30.81
Length (ft)	39.26	39.26	/ 39.26	N/A	39.26
Height (ft)	13.42	13.42	/ 13.92	N/A	13.92
Flight Design Weight (lbs)	12420	13725	/ 14000	13256	14000
Specific Range @ 30,000 ft (takeoff less 40% useable fuel) (nm/lb)	N/A	.33	/ .32	N/A	.32
Endurance @ 5000 ft (takeoff less 80% useable fuel) (lb/hr)	N/A	1130	/ 1160	N/A	1160

10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Waveoff (altitude loss ft)	N/A	50 / 70	50	50
Bolter (ground roll distance ft @ 15 kts WOD)	N/A	325 / 425	270-315	325
Lateral Directional Stability (sideslip excursion approach configuration)(deg)	N/A	4 / 6	4	4
Roll Off at Stall (approach configuration) (deg)	N/A	<30 / 30	20	<30
"G" Excursion Speed Brake Extension (Gs)	N/A	.25 / .40	.40	.40
Longitudinal Stability (stick free damping ratio 10,000 ft & .86 IMN)	N/A	.45 / .25	.40	.40
Simulator				
Total Time Lag Error (ms)	N/A	124 / 155	155	155
Digital Computational System				
Main Memory with spare (MB)	N/A	4.0/2.75 / 4.0/2.0	4.0/2.0	4.0/2.0
Processing Capacity (ms)	N/A	16.05 / 16.67	16.67	16.67
Visual System Luminance (ft-l)	N/A	2.0 / 1.5	2.16	2.16
Academics				
Memory/Spare (K/MB)	N/A	640/80 / 640/40	640 / 80	640 / 80
Terminal Response Time (sec avg)	N/A	<3 / 3	<3	<3
Training Integration System				
Memory (RAM)(MB)	N/A	256 / 192	256	256
I/Os per second	N/A	210 / 75	75	75

10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Terminal Response Time (sec avg)	N/A	<3	/ 3	<3	<3
Aircraft					
Speed					
Max Level Flt (Mach)	.80	.84	/ .83	.84	.84
Approach (kts)	155-125	125	/ 125	125	125
Sustain G's @ 15,000 ft	3.0	3.4	/ 3.2	3.4	3.2
Mean Flight Hours Between Failure (MFHBF)	3.2	3.2	/ 2.0	2.7	3.2
Direct Maintenance Man Hours/Flight Hour (DMMH/FH)	10.0	10	/ 10	4.9	10.0
Availability (%).	85	85	/ 75	94	85
Simulator					
Availability (%)					
Instrument Flight Trainer (IFT)	96	95	/ 80	90	95
Operational Flight Trainer (OFT)	95	95	/ 80	90	95
Academics					
Computer Aided Instruction (CAI) System Availability (% Sched)	98	95	/ 85	100	95
Training Integration System (TIS)					
Availability (% Sched)	N/A	95	/ 85	100	95
Pilot Training Rate	600	450	/ 450	N/A	450
Utilization Rate (Hr/Yr)*	720	N/A		N/A	N/A
Max Range	1000	N/A		N/A	N/A
Wing Area	179.64	N/A		N/A	N/A

Performance values were demonstrated during Navy developmental test phases. Finalized data for demonstrated performance characteristics will be available for MS III decision.

10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations --

The TIS availability estimate was reduced because of cost effectiveness considerations. The CAI availability estimate is an actual contract specification value. Definitized FSED contract increased flight design weight. Program Manager's estimate of weight increased due to design changes to correct deficiencies discovered during DT/OT IIA. Estimates for Flight Design Weight, Specific Range, Endurance, and Bolter Ground Roll Distance were updated to reflect changes resulting from major configuration improvements including the upgraded engine and fuel control modifications and the redesigned wing to include a moveable leading edge slat.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
Draft SCP of January, 1984.

Approved Program:
DAE Approved Acquisition Program Baseline dated 27 April 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	1150.3	605.9	635.8
Procurement	2604.3	3867.4	3887.9
Airframs/CFE	(1259.1)		(2103.1)
Engine/Accessories	(363.6)		(209.8)
Electronics CFE/GFE	(136.6)		(230.5)
Change Allowance/ECO	(42.9)		(59.6)
Other GFE	(17.7)		(114.3)
Nonrecurring	(35.4)		(161.0)
Adv Prod Adjustment	(0.0)		(8.3)
Total Flyaway	(1855.3)		(2886.6)
Other Wpn Sys Cost	(577.5)		(705.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(171.5)		(296.0)
Construction (MILCON)	0.0	24.2	24.2
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	3754.6	4497.5	4547.9

11a. **Total Program Cost and Quantity (Cont'd):**

	Planning Estimate	Approved Program	Current Estimate
Escalation	1707.4	1899.3	1843.7
Development (RDT&E)	(192.6)	(85.9)	(95.0)
Procurement	(1514.8)	(1806.5)	(1741.8)
Construction (MILCON)	(0.0)	(6.9)	(6.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	5462.0	6396.8	6391.6
b. Quantity --			
Development (RDT&E)	4	4	2
Procurement	300	268	268
Total	304	272	270

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
Draft SCP of January, 1984.

Approved Program:
DAE Approved Acquisition Program Baseline dated 27 April 1993.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6391.6	6396.8	6391.6
(2) Quantity	270	270	270
(3) Unit Cost	23.673	23.692	23.673

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	285.3	258.1	311.4
Less CY Adv Proc	25.5	25.5	30.8
Plus PY Adv Proc	21.0	21.0	25.5
Net Total	280.8	253.6	306.1
(2) Quantity	12	12	12
(3) Unit Cost	23.400	21.133	25.508

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1342.9	4119.1	0.0	5462.0
Previous Changes:				
Economic	-23.3	-446.5	-1.9	-471.7
Quantity	-23.8	-317.8	-	-341.6
Schedule	-619.6	+375.1	-	-244.5
Engineering	+65.4	+810.0	-	+875.4
Estimating	+53.9	+769.7	+33.0	+856.6
Other	-	-	-	-
Support	-103.7	+404.3	-	+300.6
Subtotal	-651.1	+1594.8	+31.1	+974.8
Current Changes:				
Economic	-1.3	-162.9	-	-164.2
Quantity	-	-	-	-
Schedule	-	+318.0	-	+318.0
Engineering	+45.0	-	-	+45.0
Estimating	-4.7	-315.5	-	-320.2
Other	-	-	-	-
Support	-	+76.2	-	+76.2
Subtotal	+39.0	-84.2	-	-45.2
Total Changes	-612.1	+1510.6	+31.1	+929.6
Current Estimate	730.8	5629.7	31.1	6391.6

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1150.3	2604.3	0.0	3754.6
Previous Changes:				
Quantity	-24.7	-169.0	-	-193.7
Schedule	-497.4	+90.3	-	-407.1
Engineering	+37.9	+620.6	-	+658.5
Estimating	+47.8	+538.7	+24.2	+610.7
Other	-	-	-	-
Support	-108.0	+211.5	-	+103.5
Subtotal	-544.4	+1292.1	+24.2	+771.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+127.8	-	+127.8
Engineering	+33.6	-	-	+33.6
Estimating	-3.7	-175.4	-	-179.1
Other	-	-	-	-
Support	-	+39.1	-	+39.1
Subtotal	+29.9	-8.5	-	+21.4
Total Changes	-514.5	+1283.6	+24.2	+793.3
Current Estimate	635.8	3887.9	24.2	4547.9

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Decrease from four to two flight test aircraft.

Schedule: Milestone schedule adjustments to accommodate reduction in flight test program and earlier first flight of prototype aircraft, deletion of T-45B aircraft funding in accordance with Congressional direction.

Engineering: Reduction in requirements for flight testing and tooling and use of existing production engine vice an extensively redeveloped engine and emerging system changes to reduce O&S costs. Transfer of digital cockpit effort from the procurement

I3b. Cost Variance Analysis (Cont'd):

account.

Estimating: Revision of methodology for estimating engineering hours, accounting and estimating adjustments to accommodate revised escalation rates and reprogramming adjustments to account for historical foreign exchange rate variances. Recategorization from schedule to estimating. Addition of FY 93 funding.

Support: Reduced manpower and material to support a two vice a four flight test article program and use of a TIS based on an adaptation of a previously developed computerized instructional system, restoral of prior Navy In House support reductions.

Procurement

Economic: Revised escalation indices.

Quantity: Decrease in quantity due to reduced Pilot Training Rate (PTR).

Schedule: Revised aircraft procurement schedule and decreased quantities.

Engineering: Revised estimates to reflect restructured system characteristics approved at DSARC I/II and design changes to correct deficiencies discovered during DT/OT IIA. Addition of cockpit upgrade and global positioning system. Transfer of digital cockpit to RDTE account.

Estimating: Change in dollar/pound exchange rate, addition of SAHRS as GFE. Move of program from Long Beach, CA to St. Louis, MO.

Support: Revised estimate of ILS requirements and inclusion of depot capability.

MILCON

Economic: Revised escalation indices.

Estimating: Revised estimate of T45TS system specific MILCON. Revised to reflect force structure issues.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	N/A	-1.3

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
FY 92 transfer of Cockpit 21 from APN, and FY 93 Congressional increase for alternate engine exploration (Engineering)	+33.6	+45.0
Program adjustments including prior year (Estimating)	-3.1	-4.4
Current & prior year inflation (Estimating)	-0.6	-0.3
RDT&E Subtotal	+29.9	+39.0
(2) Procurement		
Revised escalation indices (Economic)	N/A	-162.9
Restructure of aircraft procurement. (Schedule)	+127.8	+318.0
Revised FER, McAir rates, engine breakout to GFE and congressionally directed transfer. (Estimating)	-175.4	-315.5
Revised ILS estimates (Support)	+39.1	+76.2
Procurement Subtotal	-8.5	-84.2

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
17.967	-2.355	0.997	0.272	3.409	1.987	--	1.396	5.706	23.673

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

T45TS FSED CONTRACT:	Initial Contract Price Target	Ceiling	Qty
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO N00019-84-C-0240, FFP Award: October 1, 1984 Definitized: May 1, 1986	$511.9	N/A	2

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$558.2	N/A	2	$625.7	$558.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Current contract price adjusted for extension of the flight test program due to the aircraft mishap.

Contractor estimate at completion reflects extension of the flight test program and contractor claim against the government. Program Manager estimate at completion reflects current contract price (including flight test extension) pending claim resolution. Negotiations between contractor and PCO are ongoing.

COCKPIT 21:
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO
N00019-92-C-0069, CPIF
Award: May 29, 1992
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$71.0	$73.3	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$71.0	$73.3	0	$71.0	$0.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (02/28/93)	$0.6	$0.4
Net Change	$0.6	$0.4

Explanation of Change:

This is the first time that the Cockpit 21 contract is being reported in the SAR. These variances reflect a favorable cost performance index of 1.05 and a schedule performance index of 1.03.

Since this contract is not definitized a PM estimate is not available at this time.

15. Contract Information (Cont'd):

b. Procurement --

T45TS FY 88 PROCUREMENT:
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO
N00019-84-C-0240, FFP
Award: December 1, 1986
Definitized: December 23, 1987

Initial Contract Price		
Target	Ceiling	Qty
$429.4	N/A	12

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$445.2	N/A	12	$525.9	$445.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Current contract price adjusted for government responsible fixes from DT/OT IIB and interim contractor logistics support.

Contractor estimate at completion reflects contractor claim against the government. Program Manager estimate at completion reflects current contract price pending claim resolution. Negotiations between contractor and PCO are ongoing.

T45TS FY 89/90/91 PROD:
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO
N00019-84-C-0240, FFP
Award: December 1, 1987
Definitized: February 2, 1992

Initial Contract Price		
Target	Ceiling	Qty
$557.0	$0.0	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$614.0	$0.0	24	$614.0	$614.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The FY 89/90/91 production contract was definitized in February 1992. The contract price of $614.0 includes 24 aircraft with new slatted wings, an upgraded engine, simulators, ILS support assets, and tooling investment payments through FY 1991.

15. Contract Information (Cont'd):

T45TS FY 92 ADV ACQ:
MCDONNELL DOUGLAS CORP, ST LOUIS, MO
N00019-90-C-0040, FFP
Award: April 1, 1991
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$0.0	$0.0	0

Current Contract Price		
Target	Ceiling	Qty
$262.0	$0.0	12

Estimated Price At Completion	
Contractor	Program Manager
$0.0	$0.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

This is an Advanced Acquisition contract with negotiations ongoing. The current contract price reflects termination liability.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 60.9% (14 yrs/23 yrs)

(2) Percent Program Cost Appropriated: 39.3% ($2513.6 / $6391.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY80-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2002)	Total
RDT&E	701.9	28.9	-	-	730.8
Procurement	1780.6	311.4	558.5	2979.2	5629.7
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	2513.6	340.3	558.5	2979.2	6391.6

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1980			4.2	5.1	4.2	4.2	4.2	10.6
1981			1.6	1.8	1.6	1.6	1.6	10.6
1982			5.0	5.2	4.9	4.9	4.9	7.6
1983			7.9	7.9	7.8	7.8	7.8	4.9
1984			23.2	23.2	23.6	23.6	23.6	3.8
1985			64.3	64.3	67.5	67.5	67.5	3.4
1986			112.3	112.3	121.4	121.4	121.4	2.8
1987			128.0	128.0	142.4	142.4	142.4	2.7
1988			86.4	86.4	99.4	99.4	99.4	3.0
1989			76.0	76.0	91.1	91.1	91.1	4.2
1990			21.2	21.2	26.4	26.4	26.4	4.0
1991			11.1	11.1	14.3	14.3	9.4	4.3
1992			36.3	36.3	48.1	22.9	10.8	2.8
1993			36.2	36.2	49.2	18.2	0.9	2.4
1994			20.8	20.8	28.9			2.4
Subtot	2		634.5	635.8	730.8	645.7	611.4	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1506 Aircraft Procurement, Navy								
1987				56.5	65.1	65.1	65.1	2.7
1988	12	40.1	183.8	334.7	402.3	402.3	400.7	3.0
1989	24	6.5	313.5	301.1	376.4	376.4	266.1	4.2
1990		11.0		97.3	125.9	125.9	61.8	4.0
1991		30.6		118.6	157.8	153.1	47.3	4.3
1992	12	26.0	184.6	269.9	367.8	250.1	9.4	2.8
1993	12	12.3	140.6	204.6	285.3	3.1		2.4
1994	12	7.8	127.1	218.3	311.4			2.4
1995	24	7.5	238.5	383.0	558.5			2.3
1996	30	5.2	281.8	422.0	629.1			2.3
1997	30		277.9	341.4	520.1			2.2
1998	30		272.5	327.7	510.3			2.2
1999	30		268.0	314.1	499.8			2.2
2000	30		245.1	265.6	432.0			2.2
2001	22		183.9	219.1	364.1			2.2
2002		14.0		14.0	23.8			2.2
Subtot	268	161.0	2717.3	3887.9	5629.7	1376.0	850.4	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1205 Military Construction, Navy								
1988				7.7	9.2	9.2		3.0
1989								4.2
1990				9.2	11.8	11.8		4.0
1991								4.3
1992								2.8
1993				7.3	10.1			2.4
Subtot				24.2	31.1	21.0		
Grand Total	270	161.0	3351.8	4547.9	6391.6	2042.7	1461.8	

MILCON claimant is CNET

17. Production Rate Data:

a. Production Baseline Rate

Program has not reached MS III Full Production.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	311.4	311.4	311.4	0.0	0.0
Procurement Qty	12	12	12	0	0
Proc. Unit Cost	25.950	25.950	25.950	0.000	0.000
FY 1995					
Procurement Cost	401.0	558.5	558.5	-157.5	0.0
Procurement Qty	12	24	24	-12	0
Proc. Unit Cost	33.417	23.271	23.271	+10.146	0.000
Balance of Proc. (FY 1996 to Complete)	4545.5	2979.2	2979.2	+1566.3	0.0

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	2/2
Procurement	12/11

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operations of the T45TS is for total contractor logistic support (CLS), where the Navy provides the appropriate operational military personnel and flightline consumables, and the remainder is a turn key contractor operation. This program is specifically scoped to a 450 pilot training rate (PTR) per year, spread over two sites (NAS Meridian, MS and NAS Kingsville, TX). In order to meet this PTR, 157 aircraft are required to fly 720 flight hours each per year. In section b (costs), the personnel costs are specifically for military instructors, administrators, and pilot trainees. No contractor personnel are considered in this element. O&S consumables is the cost of POL and flightline consumables provided by the Navy. Maintenance consumables usually found here are included in other direct costs since they are a CLS charge. Direct depot maintenance is a complete CLS cost which includes airframe, engine, and avionics depot maintenance. Sustaining investment is also a CLS cost and includes replenishment spares and repair parts

18a. Operating and Support Costs (Cont'd):
and support equipment replacement. Other direct costs are all CLS costs for maintenance material, supply, warehousing, transport, and administration. Indirect costs were not assessed due to the CLS concept. These figures are in revision due to the submission of an updated Navy Training Plan which was received in March 1993. The T45TS O&S Cost Study is dated April 1991 but currently being updated. There is no antecedent system for the program.

b. Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per T-45/YEAR ($K)	Avg Annual Cost Per Steady State(157) $
PERSONNEL	300.7	47.2
O&S CONSUMABLES	286.0	44.9
DIRECT DEPOT MAINTENANCE	270.2	42.4
SUSTAINING INVESTMENT	46.7	7.3
OTHER DIRECT COSTS	312.0	49.0
Total	1215.6	190.8

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Depot Maintenance	0.6	1.2	---	---	1.8
Total	0.6	1.2	---	---	1.8

This data is derived from the OP-18 Exhibit (Summary of Contractor Support Services by Categories),

A-3 ASAS

92-031

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: ASAS

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
All Source Analysis System (ASAS)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
Project Manager, ASAS
ATTN: SFAE-CC-INT
1500 PRC Drive
McLean, VA 22102-5099

COL Richard W. Johnson
Assigned: October 7, 1991
AV N/A COMM (703) 556-2939

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 64321 (Shared) D396 TACSIM
Project D926, DB19, DB20
PE 64321F

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DEPARTMENT OF DEFENSE

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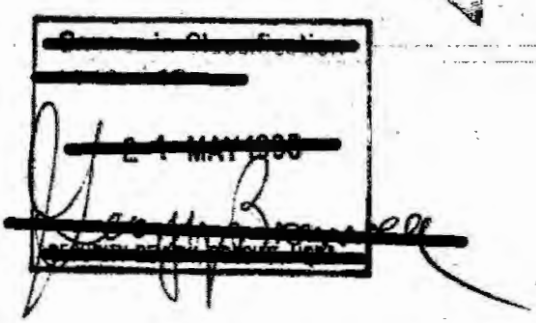

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 2035 ICN K28801 (Army)
APPN 2035 ICN BA9520 (Army)
APPN 2035 ICN BA9704 (Army) PEO CCS

5. (U) Related Programs:
Tactical Simulation (TACSIM), Collection Management Support Tools (CMST), Maneuver Control System (MCS), Advanced Field Artillery Tactical Data System (AFATDS), Combat Service Support Control System (CSSCS), Forward Area Air Defense Command and Control System (FAADC2), and Common Hardware Software (CHS), WARRIOR, Single Source Procesor-Signals Intelligence (SSP-S), and Joint Fusion Prototyping, Standard Integrated Command Post Shelters (SICPS).

6. (U) Mission and Description:
As the Intelligence and Electronic Warfare (IEW) sub-system of the Army Tactical Command and Control System, the All Source Analysis System (ASAS) provides all source intelligence fusion to gain a timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. With this knowledge, battle managers will be able to view the battlefield and more effectively conduct the land battle. ASAS is a tactical deployable ADP system used to receive and correlate data from strategic and tactical intelligence sensors/sources; produce ground battle situation displays; rapidly disseminate intelligence information; provide target nominations; help manage organic IEW assets; and, assist in providing operational security (OPSEC) support. The system is theater independent and designed to operate in peace-time, contingency, crisis, and low, mid, and high intensity wartime environments. ASAS has been designated by Congress as the Army's only tactical intelligence fusion project.

ASAS is being produced and fielded in two hardware configurations and three software versions. The current configuration, called Block I, was formerly planned for procurement and fielding to corps and active divisions in the years 1992 through 1997. This configuration was restructured in FY 91 to include Hawkeye, an OSD-sponsored balanced technology initiative. Because of the restructuring Block I will now be fielded to the above units in the FY 93-94 timeframe without having had to go into full rate production. Block I is comprised of different modules depending at which intelligence support element it is located, and whether the division is heavy or light.

The Block I configuration at the Division and Corps Tactical Operations Center Support Element (TOC) is made up of the Communications Control Set AN/TYQ-40 (Common Name: Forward Sensor Interface and Control (FSIC)), which receives and transmits

6. (U) Mission and Description (Cont'd):

information from multiple sensor systems; the Data Processor Set AN/TYQ-36 (Common Name: Dual ASAS Interface Module (DIAM)), which processes intelligence data; and the Workstation, Computer Graphics AN/TYQ-37 (Common Name: Portable ASAS Workstations (PAWS)), which is the primary user interface with the system.

The Block I configuration at the MI Battalion/Brigade Technical Control and Analysis Element (TCAE) is made up of the Computer Graphics Workstation AN/TYQ-52 (Common Name: Hawkeye), which processes intelligence data; and the FSIC or Technical Control and Analysis Center AN/YQ-130(V) (Common Name: TCAC), which provides communication interfaces and performs message processing for the Hawkeye. The Block II system configuration begins production FY 98. It is made up of objective hardware modules using Army Tactical Command and Control System Common/Hardware/Software(CHS) components. The CHS Communications Control Set replaces the FSIC, the CHS Data Processor Set replaces the DAIM, and the CHS Workstation Computer Graphics replace the PAWS. Again, configurations of these modules vary between corps and division support elements and light and heavy units. Block II ASAS will begin fielding to the Army's force structure divisions, and corps units beginning in FY00. Block III is a software development effort which will bring ASAS to it's objective capabilities. It will be used with the hardware procured in Block II. There is no Block I antecedent system. Block II ASAS replaces Block I equipment with improved functionality and common hardware and software. The Block II strategy maximizes the use of government and commercial Non-Developmental Item software, reuse of proven OSD and ACCS C3I software, multiple prototype deliveries, and continuous user test and evaluation opportunities.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

ASAS is the Army portion of a joint program originally chartered at Congressional request to acquire an Army/Air Force fusion system to meet the critically needed requirements for an automated intelligence command and control system. As a result of Congressional review and Department of the Army guidance, all modules were downsized into smaller shelters more appropriate to the battlefield environment. During FY85 the program developed the ASAS AIM Brassboard (ABB) which provided a near-real-time processing capability. The System Readiness and Verification Test for the ASAS AIM and the FSIC Module was successfully completed in October 1986. Subsequent to the test, this equipment was delivered to III Corps/2nd Armored Division. In 1986 the Assistant Secretary of the Army (Research, Development and Acquisition) approved a directed limited procurement urgent (LPU) for the Limited Capability Configurations (LCC). The procurement contract was let in March 1987 for production of LCC's. In November

7a. (U) Program Highlights (Cont'd):

1987, the Joint Oversight Group (JOG) approved an acquisition strategy of LCC's to be delivered to Ft Hood, TX in FY89. In February 1988, the JOG approved the expansion of the LCC acquisition to include systems to Europe. During 1989, ASAS conducted its Force Development Test and Experimentation which supported the Operational Test and Evaluation Agency's continuous evaluation of ASAS. On 10 January 1990, the Chief of Staff of the Army directed the program restructure to field the system very quickly with minimum level of functionality acceptable to the user. The Air Force notified the Joint Tactical Fusion Program Office (JTFPO) in April 1990 that their ENSCE program was being terminated which was based on budget constraints and the need to use hardware being provided in the upgrade of the Tactical Air Control System. In support of Operation DESERT SHIELD/STORM, the Army Intelligence Agency (AIA) established a direct link between the ASAS Field Office and the Army Operations Center, both located at Fort Hood, Texas. Portable ASAS Workstations were deployed to Southeast Asia to conduct intelligence operations, for terrain support subsystems, and to run the Rapid Air Defense Evaluation Systems in air defense brigades to place and sight PATRIOT missiles. During March 1991, the OSD-sponsored Balanced Technology Initiative, Artificial Intelligence Module Test Bed (nicknamed Hawkeye) technology was inserted in ASAS acquisition plans. The redirected program was briefed to the Command, Control, Communications and Intelligence Systems Committee in June 1991. On 4 December 1991 the C3I Committee approved the redirected program and release of the RFP for follow-on Block II contract for conversion to ATCCS Hardware/Software. In May 1991 the Joint Tactical Fusion Program Office was disestablished by the Department of the Army General Order 11 and placed ASAS as a project office under the Program Executive Office for Command and Control Systems. The restructured program will field Block I systems made up of FSIC, DAIM, PAWS (ASAS modules), TCAC and Hawkeyes (BTI) to 11 high priority units and the school. The formal integration and testing of Version 2 software for the Initial Operational Test and Evaluation was completed. The software received Defense Intelligence Agency approval to operate the Systems high mode. This first tactical system's accreditation was essential for ASAS to complete its intended purpose.

In May, 1991, in support of Operation DESERT STORM/SHIELD, the Army Intelligence Agency (AIA) established a direct link between the ASAS Field Office and the Army Operations Center, both located at Fort Hood, Texas, via a satellite link to the Southwest Asia (SWA) theater of operations. The Block I systems were the only fusion capability available providing easy access to the masses of historical data needed to successfully conduct Intelligence Preparation of the Battlefield, and monitored automated databases produced by AIA, the

7a. (U) Program Highlights (Cont'd):

Defense Intelligence Agency, and the Joint Intelligence Center, while providing near-real time source fusion analysis. This was the longest single sustained operation of ASAS, significantly exceeding previous limits in traffic quantity tested in the project's development or training phases. Portable ASAS Workstations were deployed to SWA to conduct intelligence operations, for terrain support subsystems, and to run Rapid Air Defense Evaluations Systems in air defense brigades to place and sight PATRIOT missiles.

In March 1991, because of the success of the AN/TYQ-52(V) during operations in SWA, the ASAS Project Manager included this technology insertion in its acquisition plans. The resulting configuration would use previously fielded equipment, substitute AN/TYQ-52(V)s as the TCAE-configuration workstations, and equipment acquired under the ASAS LPU, to begin fielding Block I systems in FY93. This change increased functionality, provided an automated intelligence processing capability to the Army's highest priority units earlier than previously planned, and saved the Army $171 million in RDTE and OPA funding. During the remainder of 1991, approval of these concepts were finalized and documented. On 17 December 1992, the project was approved by the Defense Acquisition Executive, and authorization was provided to release the Block II Request for Proposal to industry.

In May 1991, formal integration and testing of the Version 2 software for the Initial Operational Test and Evaluation (IOT&E) was complete, permitting its delivery and related tests to start. By December, the software had received Defense Intelligence Agency approval to operate in the Systems high mode, the first tactical system to ever receive this accreditation, essential to complete ASAS' intended purpose.

On 19 December 1991, the ASAS project documentation, including the Acquisition Program Baseline, Test and Evaluation Master Plan, Acquisition Strategy Report, and Block II Request for Proposal (RFP) was approved by the Defense Acquisition Executive, after extensive review by the staffs of the Departments of the Army and Defense and the Joint Requirements Oversight Council.

b. (U) Significant Developments Since Last Report --
On 17 January 1992, the RFP for ASAS Block II EMD contract was released. In mid-1992, as part of the review of Army programs, the Project Office was directed again to restructure its Block II efforts in light of changes to the combat developer's needs. These changes resulted in alterations to the Request for Proposal and a delay to the planned Block II contract award date. An ASAS Block I IOT&E was conducted at Ft Hood, 8 September through 11 October 1992, to assess the operational suitablilty and effectiveness of the ASAS Block I

7b. (U) Program Highlights (Cont'd):

system and to support a Material Release decision in FY 93. Hardware tested included processors and communications equipment that had been upgraded since FOT&E. All test and data collection objectives were met for IOT&E. In October 1992, the Project Office initiated efforts to validate an operational interface between ASAS systems and the Joint Surveillance Target Attack Radar. This would be the first interface between ASAS equipment and another collection and dissemination system.

Congress designated the ASAS as the Army's only tactical intelligence fusion project. As a result, two intelligence prototype systems, WARRIOR and HAWKEYE (AN/TYQ-52(V)1/2), were assigned to the Project Office for development and integration.

The ASAS system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
Block I
There are currently no breaches to the approved Acquisition Program Baseline (APB) dated 19 December 1991, or Nunn-McCurdy unit cost breaches.

Block II
There are currently schedule breaches to the approved Acquisition Program Baseline (APB) dated 19 December 1991. There are no Nunn-McCurdy unit cost breaches. A proposed APB has been submitted.

9. (U) Schedule:
BLOCK I

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
ASAS Acquisition Strategy	NOV 82	N/A	NOV 82
OSD/Congressional Approval of Acquisition Strategy	FEB 83	N/A	FEB 83
Implementing Contractor Award	MAR 83	N/A	MAR 83
Functional Capabilities Document Complete	DEC 83	N/A	DEC 83
Milestone II	N/A	MAR 83	MAR 83
Joint Oversight Group Meeting (ASARC/ ASARC Authority)	MAR 84	MAR 84	MAR 84

9a. (U) Schedule (Cont'd):
BLOCK I

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Award System Baseline Contract (Development)	DEC 84	DEC 84	DEC 84
Preliminary Design Review			
Architecture	FEB 84	FEB 84	FEB 84
Development	NOV 85	NOV 85	NOV 85
Request for Proposals	MAY 84	N/A	MAY 84
JTFP Letter of Instruction	JUL 84	N/A	JUL 84
ABB Testing	AUG 85	N/A	AUG 85
AIM/FSIC Testing	JUL 86	N/A	JUL 86
IDP	NOV 87	N/A	NOV 87
Software Release 1	NOV 87	N/A	APR 89
Software Release 2	SEP 88	N/A	MAY 91
Software Release 3	NOV 88	N/A	N/A
Directed Procurement Approval - Limited Capability Configuration	N/A	SEP 86	SEP 86
C3I Defense Acquisition Board Briefing	N/A	MAR 88	MAR 88
FDT&E	N/A	DEC 89	DEC 89
Light Contingency Configuration Phase 2 Production Start	N/A	MAR 90	MAR 90
First LCC Phase II Delivery to Ft. Hood	N/A	JUN 91	JUN 91
Version 2.0 Software Critical Design Review	N/A	APR 90	APR 90
Version 2.3 Software Summary PDR	N/A	SEP 89	SEP 89
ASAS IOT&E			
Start	N/A	SEP 92	SEP 92
Complete	N/A	NOV 92	NOV 92
ASARC Program Review (Block I Materiel Release)	N/A	APR 93	JUN 93(Ch-1)

b. (U) Previous Change Explanation -

When Air Force funds were withdrawn, Software Version 2.0 was split into two parts. Version 2.0 software would be delivered in May 91 instead of Oct 91 by delaying delivery of the sanitization functionality of the software to Version 2.1.

Software Release 3 was the Air Force Version. Since the Air Force was no longer with the project, there would be no Release 3.

Added milestones from the baseline which was pending approval.

9c. (U) Schedule (Cont'd):
BLOCK I

c. (U) Current Change Explanations --

(Ch-1) The ASAS Block I/Block II ASARC's have been combined to an ASAS ASARC.

d. (U) References --

(U) Development Estimate:
Chief of Staff, Army letter, 10 Nov 1982, Subj: All Source Analysis System (ASAS) Acquisition Strategy; Letter of Instruction for Joint Tactical Fusion Program (JTFP) Special Task Force (STF), 5 July 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 December 1991.

BLOCK II/III

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Joint Oversight Group (ASARC Authority Approves Block II)	NOV 87	NOV 87	NOV 87
DAB Program Review	JUL 92	JUL 92	AUG 93(Ch-1)
Block II RDT&E Contract Award (EMD)	JUL 92	JUL 92	SEP 93(Ch-1)
Preliminary Design Review	MAY 94	MAY 94	JUN 96(Ch-1)
Critical Design Review	DEC 94	DEC 94	NOV 96(Ch-1)
DT&E			
Start	MAY 96	MAY 96	APR 98(Ch-2)
Complete	SEP 96	SEP 96	MAY 98
IOT&E			
Start	MAR 97	MAR 97	OCT 98(Ch-1)
Complete	MAY 97	MAY 97	DEC 98(Ch-1)
Milestone III	NOV 97	NOV 97	JUL 99(Ch-3)
Contract Award	FEB 98	FEB 98	NOV 99(Ch-3)
First Article Test	FEB 00	FEB 00	N/A (Ch-3)
Initial Operational Capability	AUG 02	AUG 02	AUG 01(Ch-3)

First Article Test is a manufacturing test and should not have been included in the approved Acquisition Program Baseline. It is not being included in the draft APB being staffed.

b. (U) Previous Change Explanations --

Restructured ASAS Block I will be fielded to Force Package I using already procured modules and requiring only an ASARC/IPR approval for materiel release. ASAS Milestone III decision scheduled originally

9b. (U) Schedule (Cont'd):
BLOCK II/III
for Block I in February 1993 is now scheduled for November 1997 for Block II. Block II will be fully interoperable with ATCCS and will be built on common hardware and software CHS II and will use open architecture.

c. (U) Current Change Explanations --

(Ch-1) In 1992, reductions in funding available during the Block II development period forced the combat developer to reprioritize its requirements. This resulted in amendments to the RFP and postponing contract award from January 1993 to June 1993.

(Ch-2) The Block II prototype development effort provides for user reviews and tests of capability packages provided to Block I systems as part of the contract deliverables.

(Ch-3) Milestone III associated with the Block II development effort moved from November 97 to July 99 because of the delay in the Engineering and Manufacturing Development contract award.

d. (U) References --

(U) Development Estimate:
Chief of Staff, Army letter, 10 Nov 1982, Subj: All Source Analysis System (ASAS) Acquisition Strategy; Letter of Instruction for Joint Tactical Fusion Program (JTFP) Special Task Force (STF), 5 July 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 December 1991.

10. (U) Performance Characteristics:

(b)(1)

(b)(1)

(b)(1)

(b)(1)

(D)(1)

(b)(1)

(b)(1)

(b)(1)

(b)(1)

(b)(1)

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
BLOCK I

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	998.8	985.4	965.4
Procurement	771.1	423.9	386.9
TOTAL FLYAWAY	(771.1)		(226.6)
Other Wpns Sys Costs			(133.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(26.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 86 Base-Year $	1769.9	1409.3	1352.3
Escalation	240.0	191.3	168.5
Development (RDT&E)	(79.9)	(73.0)	(78.6)
Procurement	(160.1)	(118.3)	(89.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2009.9	1600.6	1520.8
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	0	12	12
Total	0	12	12

c. (U) Foreign Military Sales/International Cooperative Programs -- Not Applicable.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Chief of Staff, Army letter, 10 Nov 1982, Subj: All Source Analysis System (ASAS) Acquisition Strategy; Letter of Instruction for Joint Tactical Fusion Program (JTFP) Special Task Force (STF), 5 July 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 December 1991.

11a. (U) Total Program Cost and Quantity (Cont'd):
BLOCK II/III

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	512.1	453.2	226.1
Procurement	1231.8	1632.3	213.8
TOTAL FLYAWAY	(1231.8)		(126.1)
Other Wpn Sys Costs			(64.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(22.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 86 Base-Year $	1743.9	2085.5	439.9
Escalation	1187.7	2203.5	210.6
Development (RDT&E)	(270.1)	(238.6)	(87.9)
Procurement	(917.6)	(1964.9)	(122.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2931.6	4289.0	650.5
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	0	28	28
Total	0	28	28

ASAS unit of measure consists of a system being fielded to 28 Army Contingency units in Force Package one and two. These units are Army priority units identified in Division, Corps, and Echelon-Above-Corps.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Chief of Staff, Army letter, 10 Nov 1982, Subj: All Source Analysis System (ASAS) Acquisition Strategy; Letter of Instruction for Joint Tactical Fusion Program (JTFP) Special Task Force (STF), 5 July 1984.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 December 1991.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

BLOCK I

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1520.8	1599.2	1520.8
(2) Quantity	12	12	12
(3) Unit Cost	126.73	133.27	126.73
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	55.6	55.6	41.3
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	55.6	55.6	41.3
(2) Quantity	2	2	0
(3) Unit Cost	27.80	27.80	N/A

BLOCK II/III

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	650.5	4132.0	650.5
(2) Quantity	28	28	28
(3) Unit Cost	23.232	147.571	23.232
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:
Summary - All end items

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	1860.9	3080.6	0.0	4941.5
Previous Changes:				
Economic	+17.9	-135.1	-	-117.2
Quantity	-	+3787.1	-	+3787.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-184.8	-4245.4	-	-4430.2
Other	-	-	-	-
Support	-	+1550.0	-	+1550.0
Subtotal	-166.9	+956.6	-	+789.7
Current Changes:				
Economic	-27.2	+74.5	-	+47.3
Quantity	-	-2608.1	-	-2608.1
Schedule	-	+24.2	-	+24.2
Engineering	-	-	-	-
Estimating	-308.8	+467.6	-	+158.8
Other	-	-	-	-
Support	-	-1182.1	-	-1182.1
Subtotal	-336.0	-3223.9	-	-3559.9
Total Changes	-502.9	-2267.3	-	-2770.2
Current Estimate	1358.0	813.3	-	2171.3

13a. (U) Cost Variance Analysis (Cont'd):
Summary - All end items
a. (U) Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	1510.9	2002.9	0.0	3513.8
Previous Changes:				
Quantity	-	+1985.8	-	+1985.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-117.2	-2657.7	-	-2774.9
Other	-	-	-	-
Support	-	+776.6	-	+776.6
Subtotal	-117.2	+104.7	-	-12.5
Current Changes:				
Quantity	-	-1299.7	-	-1299.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-202.2	+320.9	-	+118.7
Other	-	-	-	-
Support	-	-528.1	-	-528.1
Subtotal	-202.2	-1506.9	-	-1709.1
Total Changes	-319.4	-1402.2	-	-1721.6
Current Estimate	1191.5	600.7	-	1792.2

13a. (U) Cost Variance Analysis (Cont'd):
BLOCK I

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1078.7	931.2	0.0	2009.9
Previous Changes:				
Economic	+6.2	-5.2	-	+1.0
Quantity	-	+532.6	-	+532.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.3	-1201.2	-	-1226.5
Other	-	-	-	-
Support	-	+282.2	-	+282.2
Subtotal	-19.1	-391.6	-	-410.7
Current Changes:				
Economic	-1.3	-2.3	-	-3.6
Quantity	-	-217.6	-	-217.6
Schedule	-	+3.1	-	+3.1
Engineering	-	-	-	-
Estimating	-14.3	+220.1	-	+205.8
Other	-	-	-	-
Support	-	-66.1	-	-66.1
Subtotal	-15.6	-62.8	-	-78.4
Total Changes	-34.7	-454.4	-	-489.1
Current Estimate	1044.0	476.8	-	1520.8

13a. (U) **Cost Variance Analysis (Cont'd):**
BLOCK I

a. (U) Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	998.8	771.1	0.0	1769.9
Previous Changes:				
Quantity	-	+413.5	-	+413.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-21.9	-967.6	-	-989.5
Other	-	-	-	-
Support	-	+208.7	-	+208.7
Subtotal	-21.9	-345.4	-	-367.3
Current Changes:				
Quantity	-	-177.1	-	-177.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-11.5	+186.7	-	+175.2
Other	-	-	-	-
Support	-	-48.4	-	-48.4
Subtotal	-11.5	-38.8	-	-50.3
Total Changes	-33.4	-384.2	-	-417.6
Current Estimate	965.4	386.9	-	1352.3

Addition of one year, 1993.

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Estimating: Adjustment for current and prior escalation. Decrease of estimate for withdrawal of Air Force funding from FY91 and beyond. Refinement of estimate.

Procurement
Economic: Revised escalation indices.
Adjustment of program change escalation for

13b. (U) Cost Variance Analysis (Cont'd):
BLOCK I

addition of inventory objective.

Quantity: Addition of quantities to reflect program inventory objective.
Reduction of 92 modules.

Estimating: Adjustment for current and prior escalation indices.
Revised program estimate dollar amounts now reflect accelerated program.
Increase program cost to include total program content beyond FYDP.
Decrease of estimating costs to reflect costs associated with inventory.
Increase in estimate for conversion of OMA to OPA dollars for FY92-FY97 for interim support, program management office salaries, direct program office costs and other program support costs.
Correction of previous SAR to convert intial spares from estimating to support. Reduction of estimate as a result of restructured program, correction of variance categorization, and adjustment for actual costs in prior years.

Support: Correction of previous SAR to convert initial spares from estimating to support. Increase in other weapon system support costs and correction of variance categorization previously shown.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.6	+0.7
Reduction of costs as a result of program restructure from modules to systems (Estimating)	-12.1	-15.0
RDT&E Subtotal	-11.5	-15.6

13c. (U) Cost Variance Analysis (Cont'd):
BLOCK I

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-9.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+7.5
Adjustment for Current & Prior Inflation. (Estimating)	+1.0	+1.1
Quantity Variance resulting from restructuring from 137 modules to 12 systems. (Quantity) (Quantity)	-177.1	-217.6
Delay of contract procurement efforts up to one year (Schedule)	--	+3.1
Adjustment of program costs for restructure from 137 modules to 12 systems (Estimating)	+185.7	+219.0
Adjustment for Current & Prior Inflation. (Support)	+1.3	+1.9
Reduction of INITIAL SPARES requirement (Support)	-8.1	-11.6
Refinement of estimate for support cost (Support)	-41.6	-56.4
Procurement Subtotal	-38.8	-62.8

13a. (U) Cost Variance Analysis (Cont'd):
BLOCK II/III

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	782.2	2149.4	0.0	2931.6
Previous Changes:				
Economic	+11.7	-129.9	-	-118.2
Quantity	-	+3254.5	-	+3254.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-159.5	-3044.2	-	-3203.7
Other	-	-	-	-
Support	-	+1267.8	-	+1267.8
Subtotal	-147.8	+1348.2	-	+1200.4
Current Changes:				
Economic	-25.9	+76.8	-	+50.9
Quantity	-	-2390.5	-	-2390.5
Schedule	-	+21.1	-	+21.1
Engineering	-	-	-	-
Estimating	-294.5	+247.5	-	-47.0
Other	-	-	-	-
Support	-	-1116.0	-	-1116.0
Subtotal	-320.4	-3161.1	-	-3481.5
Total Changes	-468.2	-1812.9	-	-2281.1
Current Estimate	314.0	336.5	-	650.5

13a. (U) Cost Variance Analysis (Cont'd):
BLOCK II/III

a. (U) Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	512.1	1231.8	0.0	1743.9
Previous Changes:				
Quantity	-	+1572.3	-	+1572.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-95.3	-1690.1	-	-1785.4
Other	-	-	-	-
Support	-	+567.9	-	+567.9
Subtotal	-95.3	+450.1	-	+354.8
Current Changes:				
Quantity	-	-1122.6	-	-1122.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-190.7	+134.7	-	-56.0
Other	-	-	-	-
Support	-	-480.2	-	-480.2
Subtotal	-190.7	-1468.1	-	-1658.8
Total Changes	-286.0	-1018.0	-	-1304.0
Current Estimate	226.1	213.8	-	439.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices and adjustment for program change related escalation.

Estimating: Adjustment for current and prior escalation
Revised Program Estimate dollar amounts now reflect accelerated program. Increase program cost to include total program content beyond FYDP.
Extension of estimate to include total program content.
Descoping of development efforts for remote workstations as a result of budget reduction, removal of Blocks IV & V and refinement of estimate

13b. (U) Cost Variance Analysis (Cont'd):

BLOCK II/III

for Block III and breakout of Block I cost for separate reporting.

Procurement

Economic: Revised escalation indices.
Adjustment of program change escalation for addition of inventory objective.

Quantity: Addition of quantities to reflect program inventory objective.

Estimating: Adjustment for current and prior escalation indices.
Revised program estimate dollar amounts now reflect accelerated program.
Increase program cost to include total program content beyond FYDP.
Decrease of estimating costs to reflect costs associated with inventory.
Increase in estimate for conversion of OMA to OPA dollars for FY92-FY97 for interim support, program management office salaries, direct program office costs and other program support costs.
Correction of previous SAR to convert initial spares from estimating to support.
Reduction of estimate as a result of restructured program and correction of previous variance categorization.

Support: Correction of previous SAR to convert initial spares from estimating to support. Refinement of estimate based on new requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-39.9
Economic Adjustment for Negative Program Change. (Economic)	N/A	+14.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.5	+0.6

13c. (U) Cost Variance Analysis (Cont'd):
BLOCK II/III

	(Dollars in Millions) Base-Year	Then-Year
Reduction of cost associated with program restructure from modules to systems (Estimating)	-191.2	-295.1
RDT&E Subtotal	-190.7	-320.4
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-536.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+613.6
Quantity variance associated with reconfiguration from modules to systems (Quantity)	-1122.6	-2390.5
Delay in contract award to FY 99 (Schedule)	--	+21.1
Adjustment of costs for reconfiguration of project from modules to systems (Estimating)	+134.7	+247.5
Decrease in INITIAL SPARES requirements (Support)	-120.0	-259.7
Decrease in support costs based on accelerated Block II/III fielding (Support)	-360.2	-856.3
Procurement Subtotal	-1468.1	-3161.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

BLOCK I
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	126.733

No initial estimate for PAUC was possible becuase no unit of measure had been defined.

BLOCK II/III
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	23.232

No Initial Estimate for PAUC was possible because no unit of measure had been defined at that time.

15. (U) Contract Information (Then-Year Dollars in Millions):

The above contract data is applicable to the Block I systems only. Contract award for development of the Block II systems is scheduled for June 1993.

a.(U) RDT&E --
(U) ASAS:
Jet Propulsion Laboratory, Pasadena, CA
NAS - -7-918, CREI
Award: March 1, 1983
Definitized: March 1, 1983

Initial Contract Price		
Target	Ceiling	Qty
$944.0	$0.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$944.0	$0.0	0	$944.0	$944.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$3.8	$-0.9
Cumulative Variances To Date (03/22/92)	$4.6	$0.0
Net Change	$0.8	$0.9

Explanation of Change:

The cost variance is attributed to System Management caused by large staff reductions, underruns in the subcontracts for technical monitoring and management at division level. These efforts also allowed solving the overruns in the software management area. There is no impact to the contract or program for this variance.

This is the last time this contract will be reported since the contract has been completed.

b.(U) Procurement --

(U) LCC Phase II CPFF:

JPL, Pasadena, CA
NAS - -7- 918, CPFF
Award: March 1, 1990
Definitized: March 1, 1990

	Initial Contract Price		
	Target	Ceiling	Qty
	$225.1	$0.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$225.1	$0.0	0	$225.1	$225.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.6	$-9.9
Cumulative Variances To Date (02/21/93)	$1.3	$1.4
Net Change	$1.9	$11.3

Explanation of Change:

The schedule variance was caused by a delay in the Block II RFP. The delivery of LCC II Option I was ahead of the revised schedule since last October 1992 and the remaining variance is indicative of a billing problem and not a slip in deliverables.

The favorable cost variance is attributable to underruns in contract monitoring tasks which are apportioned to Martin Marietta, Loral, ManTech and logistic field trip teams and lower than planned training development materials.

There are no contract or program impacts resulting from the above cost and schedule variances.

15. (U) Contract Information (Cont'd):
The current data reflected above continues to include both firm fixed price contracts and cost plus fixed fee contracts. The period of performance here is work period ending 20 December 1992 taken from JPL Report 7081-241, Issue 46. Both schedule and cost variances have shown a marked improvement in the 4th Quarter 1992.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 47.8% (11 yrs/23 yrs)

(2) Percent Program Cost Appropriated: 68.9% ($1496.0 / $2171.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

BLOCK I

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1044.0	-	-	-	1044.0
Procurement	386.7	41.3	31.9	16.9	476.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1430.7	41.3	31.9	16.9	1520.8

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

BLOCK II/III

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2005)	Total
RDT&E	65.3	1.0	47.9	199.8	314.0
Procurement	-	-	-	336.5	336.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	65.3	1.0	47.9	536.3	650.5

16c. (U) Program Funding Summary (Cont'd):
BLOCK I

c. (U) Annual Summary -- BLOCK I

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1983				27.8	25.8	25.8	25.8	4.9
1984				48.2	46.4	46.4	46.4	3.8
1985				66.9	66.3	66.3	66.3	3.4
1986				142.2	145.3	145.3	145.3	2.8
1987				141.8	148.7	148.7	148.7	2.7
1988				136.0	147.9	147.9	147.9	3.0
1989				108.6	122.8	122.8	122.8	4.2
1990				75.5	88.7	88.7	88.7	4.0
1991				47.1	57.7	57.7	57.7	4.3
1992				68.7	86.1	86.1	6.9	2.8
1993				6.5	8.3			
Subtot				869.3	944.0	935.7	856.5	
Appropriation: 2035 Other Procurement, Army								
1987	3		72.5	85.2	93.7	93.7	93.7	2.7
1988	1		28.3	33.2	38.2	38.2	38.2	3.0

16c. (U) Program Funding Summary (Cont'd):
BLOCK I

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1989	1		16.4	21.3	25.2	25.2	25.2	4.2
1990	2		49.6	67.2	82.2	82.2	82.2	4.0
1991	1		22.4	26.5	33.3	33.3	33.1	4.3
1992	2		27.8	45.4	58.5	58.5	19.0	2.8
1993	2		9.6	42.2	55.6	24.0	4.8	2.4
1994				30.8	41.3			2.4
1995				23.3	31.9			2.3
1996				6.8	9.6			2.3
1997				2.0	2.9			2.2
1998				2.0	2.9			2.2
1999				1.0	1.5			2.2
Subtot	12		226.6	386.9	476.8	355.1	296.2	
Army	12		226.6	1256.2	1420.8	1290.8	1152.7	

PMAS dollars for 1999.

Appropriation: 3600 Research, Development, Test + Eval, AF

1983				5.6	5.2	5.2	5.2	4.9
1984				5.8	5.6	5.6	5.6	3.8

16c. (U) Program Funding Summary (Cont'd):
BLOCK I

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1985				14.9	14.8	14.8	14.8	3.4
1986				25.2	25.7	25.7	25.7	2.8
1987				23.4	24.7	24.7	24.7	2.7
1988				7.1	7.7	7.7	7.7	3.0
1989				6.2	7.0	7.0	7.0	4.2
1990				7.9	9.3	9.3	9.3	4.0
Subtot				96.1	100.0	100.0	100.0	
USAF				96.1	100.0	100.0	100.0	
Grand Total	12		226.6	1352.3	1520.8	1390.8	1252.7	

c. (U) Annual Summary -- BLOCK II/III

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1991				2.7	3.3	3.3	0.6	4.3
1992				15.2	19.1	13.2		2.8

16c. (U) Program Funding Summary (Cont'd):
BLOCK II/III

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1993				33.4	42.9	3.2	1.3	2.4
1994				0.8	1.0			2.4
1995				36.0	47.9			2.3
1996				34.0	46.7			2.2
1997				31.5	44.2			2.2
1998				17.8	25.5			2.2
1999				14.7	21.6			2.2
2000				7.9	11.9			2.2
2001				14.4	22.0			2.2
2002				11.2	17.5			2.2
2003				5.7	9.1			2.2
2004				0.8	1.3			2.2
Subtot				226.1	314.0	19.7	1.9	
Appropriation: 2035 Other Procurement, Army								
1998				1.6	2.3			
1999	2		10.7	18.9	28.3			2.2
2000	5		23.2	48.6	74.4			2.2

16c. (U) Program Funding Summary (Cont'd):
BLOCK II/III

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
2001	10		45.5	56.0	87.6			2.2
2002	9		34.7	55.1	88.1			2.2
2003	2		12.0	21.2	34.7			2.2
2004				3.2	5.3			2.2
2005				9.2	15.8			
Subtot	28		126.1	213.8	336.5			
Grand Total	28		126.1	439.9	650.5	19.7	1.9	

17. (U) Production Rate Data:

BLOCK I

a. (U) Production Baseline Rate

None.

17b. (U) Production Rate Data (Cont'd):
BLOCK I

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	41.3	41.3	41.3	0.0	0.0
Procurement Qty	N/A	0	N/A	N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	31.9	31.9	31.9	0.0	0.0
Procurement Qty	N/A	0	N/A	N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	16.9	16.9	16.9	0.0	0.0

This section is not applicable to Block I ASAS since there are less than six systems being authorized in any year.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

BLOCK II/III

a. (U) Production Baseline Rate

ASAS hardware will be procured off the Common Hardware Software (CHS) and SAIC contracts managed by PM CHS. Both contracts are for non-developmental items. The steady state full production rate for the CHS contract is identified as 200 units per month. The steady state full production rate for the SAIC contract is 300 units per month. Annual production rates for both contracts are determined based on the combined requirements of all the Army Tactical Command and Control Systems (ATCCS).

17b. (U) Production Rate Data (Cont'd):
BLOCK II/III

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty	N/A	0	N/A	N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty	N/A	0	N/A	N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	336.5	336.5	336.5	0.0	0.0

As the full production rates for the CHS contracts are based on the combined requirements of the ATCCS programs, cost and quantity variances can not be determined on an individual program basis.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
BLOCK I

a. (U) Assumptions and Ground Rules --

(Reference: DAB Baseline Cost Estimate (BCE) 25 July 1991) The concept of operation for ASAS is a mobile battlefield management information system operating on a peacetime scenario utilizing an operating tempo of 2160 hours per year, with exception to Military Pay which is based on a wartime scenario with an operating tempo of 7555.5 hours per year. The system employs a three tier maintenance concept. At the Organizational level, system malfunctions will be analyzed down to the Line Replaceable Unit (LRU); at the Intermediate (DS/GS) level, repair and replacement of unserviceable assemblies and subassemblies will be accomplished; and major overhaul and rebuilding will occur at the Depot.

The costs to operate and support the system include military and

18a. (U) Operating and Support Costs (Cont'd):
BLOCK I

civilian personnel costs for operators, maintainers, and management. Consumables consists of PO&L. The direct depot maintenance category includes costs for overhauls, supply depot support, software maintenance, and initial depot spares. Replenishment spares and repair parts make up the Sustaining Investment costs. Other direct costs include transportation and test and evaluation. Additionally, indirect costs include the PCS, training, and recruiting costs, as well as base operations, and integrated material management. There is no antecedent system for Block I.

b. (U) Costs -- (FY ASAS Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per Antecedent
Personnel	1.6	N/A
O&S Consumables	0.1	N/A
Direct Depot Maintenance	1.1	N/A
Sustaining Investment	0.6	N/A
Other Direct Costs	0.1	N/A
Indirect Costs	0.6	N/A
Total	4.1	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O & M	14.0	7.5	8.2	---	29.7
Total	14.0	7.5	8.2	---	29.7

18a. (U) Operating and Support Costs (Cont'd):
BLOCK II/III

a. (U) Assumptions and Ground Rules --

(Reference: DAB Baseline Cost Estimate (BCE), 25 July 1991) The concept of operation for ASAS is a mobile battlefield automated data processing system operating on a peacetime scenario utilizing an operating tempo of 2160 hours per year, with exception to Military Pay which is based on a wartime scenario with an operating tempo of 7555.5 hours per year. The system employs a three tier maintenance concept. At the Organizational level, system malfunctions will be analyzed down to the Line Replaceable Unit (LRU); at the intermediated (DS/GS) level, repair and replacement of unserviceable assemblies and subassemblies will be accomplished; and major overhaul and rebuilding will occur at the Depot.

The costs to operate and support the system include personnel costs of operators, maintainers, and support personnel. PCS costs are included. The sustaining materiel cost consists primarily of replenishment spares and repair parts, POL, and Modifications Kits.

The Block II configuration differs from Block I.

b. (U) Costs -- (FY ASAS Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per Antecedent
Personnel	1.7	0.8
O&S Consumables	0.0	0.3
Direct Depot Maintenance	0.4	2.3
Sustaining Investment	0.4	0.1
Other Direct Costs	0.1	0.0
Indirect Costs	0.4	1.0
Total	3.0	4.5

c. (U) Contractor Support Costs -- None.

92-038

A-10. COMANCHE

***[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 26 1993
5
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Comanche Program (RAH-66)

2. (U) DoD Component: Army

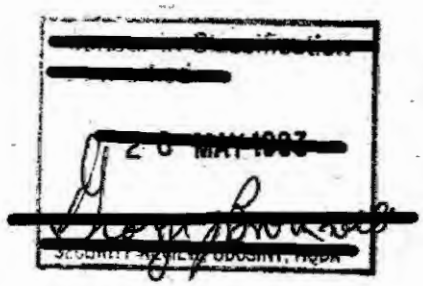
3. (U) Responsible Office and Telephone Number:
Comanche Program Manager's Office
ATTN: SFAE-AV-RAH
4300 Goodfellow Blvd.
St. Louis, MO 63120-1798

BG Orlin L. Mullen
Assigned: July 1, 1991
AV 693-1800 COMM 314 263-1800

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 63220 Project D325
PE 64810 Project D327, DC72
PE 64216 Project DC72
PE 64223 Project D327, D397, DC72

PE 64810 Project D327/DC72 (FY88 Only)



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OASD(PA) DFOISR 93-C-707

[redacted]

5. (U) Related Programs:
Air-to-Air Stinger Missile System; Anti-tank Hellfire Missile System; AH-64 and Longbow.

6. (U) Mission and Description:
The RAH-66 Comanche will be a lightweight, low cost, twin engine advanced helicopter that will retire the current light fleet of tactically obsolescent AH-1, OH-6 and OH-58A/C helicopters for the primary mission of armed reconnaissance with attack and embedded air combat capabilities. Comanche will provide an increase in combat effectiveness and battlefield survivability and will modernize the Army's light attack/scout fleet. Comanche will correct major light fleet deficiencies such as marginal night and adverse weather capability; location/navigation inaccuracies; inability to self-deploy to overseas theaters of operations; inadequate reliability, performance and survivability; and high operating costs. Comanche system improvements include light weight composite airframe structures; protected anti-torque systems; low vibration, high reliability rotor systems; reduced signature; built-in diagnostics/prognostics and second generation target acquisition and night sensors. The Comanche electronics architecture will be compatible with the Air Force F-22 Fighter. The Comanche system will be integrated with the Army aviation force structure to complement the AH-64 attack helicopter.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In March 1982, the Army Aviation Mission Area Analysis (AAMAA) was endorsed by senior Army leadership at the Army Aviation Systems Program Review. The Comanche emerged as the most viable concept to meet Army Aviation's capability, modernization, and standardization needs. A Comanche Special Working Group (SWG) was formed in January 1983, to provide a framework for the Comanche program. A Justification for Major Systems New Start (JMSNS) was submitted in June 1983. Significant program events occurring during FY84 included completion of the Trade-Off Determination (TOD), start of work on the Trade-Off Analysis (TOA) and Operational and Organizational (O&O) Plan, approval by the Office of the Secretary of Defense (OSD) of the JMSNS. The Comanche Program was designated as the Army's highest priority RDT&E effort. In December 1985, a Defense Science Board (DSB) Task Force was established to review the Comanche program. The DSB report stated that the Army had a need for a new light helicopter and that technology existed which could support the design of a weapon system of much greater performance than the existing fleet. On 16 May 1988, the Comanche Army System Acquisition Review Council (ASARC) was conducted in preparation for Milestone I with the OSD Defense Acquisition Board (DAB). The DAB met on 9 June 1988, for the Comanche Milestone Decision I Review. The ADM dated 17 June 1988 gave approval for Comanche to proceed with Demonstration/Validation

7a. (U) **Program Highlights (Cont'd)**:

(Dem/Val). In 1988, the Light Helicopter Turbine Engine Company (LHTEC) was announced the winner of the competitive T800 engine program and the contractor teams of Boeing Sikorsky and McDonnell/Bell began competitive Dem/Val efforts. Program restructuring deferred the Engineering Manufacturing and Development (EMD) phase in August 1990 and extended the (Dem/Val) prototype phase by an additional two years. A follow-on Dem/Val Prototype phase was initiated when a contract was awarded to the Boeing Sikorsky team on 12 April 1991.

b. (U) Significant Developments Since Last Report --
The Comanche program was again restructured in January 1992, as a result of 29 January 1992 Defense Acquisition Executive (DAE) guidance and the FY93 President's Budget reductions. Because of the significant reductions, the program focus has been placed on critical components, including avionics, an upgraded T800 engine and Longbow. The airframe and engine contractors for the Comanche program submitted new proposals. Evaluation and subsequent negotiations began in August 1992.

The Comanche system is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --
On 5 January 1993, contract modifications were signed with Boeing Sikorsky and LHTEC for the Dem/Val prototype phase.

8. (U) **Threshold Breaches**:
There are currently no breaches to the approved Acquisition Program Baseline (APB) dated 4 January 1993 and no Nunn-McCurdy unit cost breaches.

9. (U) **Schedule**:

a. (U) Milestones --	Planning Estimate	Approved Program	Current Estimate
T800 Engine FSD Contract Award	JUL 85	JUL 85	JUL 85
Milestone I (ASARC 1)	FEB 87	MAY 88	MAY 88
Milestone I (DAB 1)	MAR 87	JUN 88	JUN 88
Award Air Vehicle Phase 1/Dem Val Contracts	OCT 87	OCT 88	OCT 88
T800 FSD Downselection	SEP 88	OCT 88	OCT 88
USD(A) Program Review	N/A	JAN 91	JAN 91
Award Dem/Val Prototype Phase Contract	N/A	APR 91	APR 91

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
Early Operational Assessment			
Start	N/A	OCT 91	OCT 91
Complete	N/A	APR 97	APR 97
Critical Design Review	N/A	OCT 93	OCT 93
Dem/Val Prototype Flight Test Program			
Start	N/A	AUG 95	AUG 95
Complete	N/A	SEP 97	SEP 97
Milestone II (ASARC II)	FEB 87	N/A	N/A (Ch-1)
Milestone II (DAB II)	MAR 87	OCT 97	OCT 97(Ch-1)
Award FSD Contracts (Phase II/FSD)	JUL 89	N/A	N/A (Ch-1)
Award EMD Contract	N/A	NOV 97	NOV 97
First Flight	SEP 91	N/A	N/A (Ch-1)
T800 Engine Production Contract Award	JAN 93	JUL 99	JUL 99(Ch-1)
DT/EUTE* Completed	NOV 93	N/A	N/A (Ch-1)
DT/LUT			
Start	N/A	APR 00	APR 00
Complete	N/A	JUL 99	JUL 00
LRIP Program Review	N/A	OCT 00	OCT 00
FDT&E/ARTEP			
Start	N/A	MAR 02	MAR 02
Complete	N/A	MAY 02	MAY 02
IOT			
Start	N/A	JUN 02	JUN 02
Complete	N/A	SEP 02	SEP 02(Ch-1)
Milestone IIIA (LRIP)	JAN 94	N/A	N/A (Ch-1)
Air Vehicle Production Contract Award (LRIP)	JAN 94	N/A	N/A (Ch-1)
First Air Vehicle Production Delivery	JUL 95	FEB 02	FEB 02(Ch-1)
First Unit Equipped	N/A	DEC 02	DEC 02
Full Rate Production Contract Award	N/A	JAN 03	JAN 03
Milestone (ASARC/DAB III)	JAN 94	NOV 02	NOV 02(Ch-1)
IOC	MAY 96	JAN 03	JAN 03(Ch-1)
RAM Validation			
Start	N/A	FEB 03	FEB 03
Complete	N/A	MAR 04	MAR 04

b. (U) Previous Change Explanations --

Milestones revised from AMC approved Acquisition Strategy (16 December 1985) to reflect 1995 IOC Acquisition strategy as approved by the Chief of Staff of the Army on 10 November 1986. Milestones were revised based upon DAE approved baseline dated 15 June 1988 (Milestone I ADM, dated 17 June 1988). Milestones

9b. (U) Schedule (Cont'd):
changed as a result of a schedule assessment made in response to the direction contained in the SecDef letter, 23 August 1990. Program restructured per DAE, 29 January 1992, subject: Implementation of Acquisition Decision.

c. (U) Current Change Explanations --

(Ch-1) Dates changed from TBD to dates shown in the APB dated 4 January 1993.

d. (U) References --

(U) Planning Estimate:
AMC Approved Acquisition Strategy (16 December 1985).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 04 January 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
RAH Primary Mission Gross Weight (PMGW)						
Empty Weight (lbs)	N/A	7765	/ 8300	TBD	7765	(CH-1)
Gross Weight (lbs)	N/A	10595	/ 11900	TBD	10595	(CH-1)
Flight Performance (Primary Mission): RAH						
Vertical Rate of Climb (VROC) Feet per Minute (FPM) 4000 ft/95 deg F @ (PMAW)	500	1420	/ 500	TBD	500	
Dash Speed, Knots @ 4000 ft/95 deg F	N/A	175	/ 160	TBD	175	(CH-1)
Turn to Target (sec)	N/A	4.7	/ 7.0	TBD	4.7	
Single Engine Operation, Knots @ CRP 100 FPM Rate of Climb	N/A	40	/ 80	TBD	40	
Crashworthiness (Vertical Impact Velocity, FPS)	N/A	38	/ 28	TBD	38	
EMI/EMP Protection (Volt/M)	N/A	200	/ 100	TBD	200	

10a. (U) Performance Characteristics (Cont'd):

PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)	[redacted]		

10a. (U) **Performance Characteristics (Cont'd):**

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
External Missile Capacity	N/A	8	/ 4	TBD	8	(CH-1)
Gun Ammo Capacity (rounds)	N/A	500	/ 300	TBD	500	
Refuel/Rearm (no. of personnel-time (mins)	N/A	3-15	/ 4-30	TBD	3-15	
Air Transportability Time to Load/Unload (min)						
C-5A	N/A	20	/ 60	TBD	20	
C-130	N/A	22	/ 90	TBD	22	
Self Deployable (NM)	1260	1260	/ 1120	TBD	1260	

b. (U) Previous Change Explanations --

Utility/Attack design excluded from refocused program. MTBMAF and MTTR revised to reflect changes in Reliability, Availability and Maintainability (RAM) rationale report. MMH/FH revised from 2.8 to 2.6 hours to reflect results of RAM data analysis. PMGW weapon load increased from 4 to 6 missiles to reflect analysis of Comanche Milestone I Cost and Operational Effectiveness Analyses (COEA). Engine size changed from 1200 to 1233 due to initial testing of T800 engine. MTBEMA changed from 4.5 to 5.1 and MTBMAF from 8.5 to 9.5 to reflect program goals instead of thresholds. Dash Speed estimate adjusted from 180 knots to 170 knots to reflect Dem/Val phase design trade-offs.

c. (U) Current Change Explanations --

(Ch-1) - Current estimates revised to reflect values in the APB dated 4 January 1993.

d. (U) References --

(U) Planning Estimate:
AMC Approved Acquisition Strategy (16 December 1985).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 04 January 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1756.2	4094.7	4605.6
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	1756.2	4094.7	4605.6
Escalation	376.8	1732.3	2025.3
Development (RDT&E)	(376.8)	(1732.3)	(2025.3)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2133.0	5827.0	6630.9
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	0	N/A	0
Total	0	N/A	0

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:
AMC Approved Acquisition Strategy (16 December 1985).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 04 January 1993.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2133.0	0.0	0.0	2133.0
Previous Changes:				
Economic	+84.4	-	-	+84.4
Quantity	-	-	-	-
Schedule	+265.4	-	-	+265.4
Engineering	+455.4	-	-	+455.4
Estimating	+477.3	-	-	+477.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1282.5	-	-	+1282.5
Current Changes:				
Economic	-55.2	-	-	-55.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3270.6	-	-	+3270.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3215.4	-	-	+3215.4
Total Changes	+4497.9	-	-	+4497.9
Current Estimate	6630.9	-	-	6630.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1756.2	0.0	0.0	1756.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+145.2	-	-	+145.2
Engineering	+301.3	-	-	+301.3
Estimating	+349.3	-	-	+349.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+795.8	-	-	+795.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2053.6	-	-	+2053.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2053.6	-	-	+2053.6
Total Changes	+2849.4	-	-	+2849.4
Current Estimate	4605.6	-	-	4605.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices

Schedule: Program restructured per SecDef letter, 23 August 1990.

Engineering: LH Longbow Development

Estimating: Acquisition strategies revised to reflect varying competitive development time and prototype fly-off alternatives. Assault/utility design was excluded.

Total DAE approved baseline program added FY93 through FY96 estimate.

Program estimate reduced length and scope of

13b. (U) Cost Variance Analysis (Cont'd):

Dem/Val effort. This reduction was in response to the DEPSECDEF 20 January 1988, ADM.

Update estimate of competitive T800 program to actuals.

Revised estimates of LH development testing, and LH prototypes.

Program restructured per DAE memorandum, 29 January 1992, subject: Implementation of Acquisition Decisions.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-55.2
Adjustment for Current & Prior Inflation. (Estimating)	+7.4	+10.0
Program Restructure per DAE Memo, 4 Jan 93, subject: Restructured Comanche Program. (Estimating)	+2046.2	+3260.6
RDT&E Subtotal	+2053.6	+3215.4

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) T800 FSD ENGINE PROGRAM:	Initial Contract Price Target	Ceiling	Qty
LHTEC, ST LOUIS, MO DAAJ09-85-C-B017, FPP 1/& 2/ Award: July 19, 1985 Definitized: July 19, 1985	$207.8	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$284.1	$284.1	0	$284.1	$284.1

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-7.3	$-2.7
Cumulative Variances To Date (01/31/93)	$-15.1	$-2.0
Net Change	$-7.8	$0.7

Explanation of Change:

Schedule and cost variances due to delays in completion of T800 Qualification Testing Phase of Program.

1/ The basic contract was negotiated as a FFP RDT&E effort; however the contract does contain RDT&E CPFF options.

2/ Contract is 98% complete. Contract information will not be reported in subsequent SARs.

(U) Dem/Val Prototype:
Boeing Sikorsky JPO, Philadelphia, PA
DAAJ09-91-C-A004, CPIF/AF
Award: April 12, 1991
Definitized: April 12, 1991

Initial Contract Price		
Target	Ceiling	Qty
$1886.6	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1997.2	$2002.2	0	$1885.7	$1885.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.1	$-5.1
Cumulative Variances To Date (01/31/93)	$-9.3	$-11.7
Net Change	$-5.2	$-6.6

Explanation of Change:

Schedule and cost variances due to design changes and difficulty in staffing as quickly as projected.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 50.0% (10 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 32.2% ($2138.4 / $6630.9)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY84-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2003)	Total
RDT&E	2138.4	367.1	444.7	3680.7	6630.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2138.4	367.1	444.7	3680.7	6630.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1984				1.0	1.0	1.0	1.0	3.8
1985				67.8	71.4	71.4	70.4	3.4
1986				98.6	106.9	106.9	106.9	2.8
1987				123.4	137.6	137.6	137.5	2.7
1988				109.9	127.1	127.1	126.7	3.0
1989				147.3	177.1	177.0	176.6	4.2
1990				215.5	269.3	269.0	259.2	4.0
1991				260.3	338.3	338.2	322.1	4.3
1992				386.1	514.5	509.0	373.8	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1993				289.7	395.2	58.7	1.9	2.4
1994				263.1	367.1			2.4
1995				311.5	444.7			2.3
1996				230.6	336.4			2.3
1997				181.6	270.8			2.2
1998				267.2	407.3			2.2
1999				314.2	489.5			2.2
2000				480.6	765.1			2.2
2001				488.8	795.3			2.2
2002				265.5	441.4			2.2
2003				102.9	174.9			2.2
Subtot				4605.6	6630.9	1795.9	1576.1	
Grand Total				4605.6	6630.9	1795.9	1576.1	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

b. (U) Not applicable for Pre-Milestone II programs.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Not applicable for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

A-23 MSE

92-055

OK

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MSE (Comm Sys)

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
MAY 26 1993 21
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Mobile Subscriber Equipment (MSE)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
SFAE-CM-MSE
FORT MONMOUTH, NJ 07703-5210
AV 995-2524 COMM (908) 544-2524
COL JOHN E. BOREL
Assigned: February 1, 1993

No SECURITY Objection
to PUBLIC RELEASE
25 MAY 1993
SECURITY REVIEW, DCSINT, HQDA

4. Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 2035 ICN BA 9714 (Army)
APPN 2035 ICN BB 1610 (Army)

5. Related Programs:
None

6. Mission and Description:
The MSE system is a common-user, secure, self-organizing communications system which provides users with a means of communication throughout the battlefield, in either a mobile or static situation. The MSE system integrates all of the functions of a total communications system. The system consists of five major hardware elements: node centers, extension nodes (large and small), Mobile Radio telephones, System Control and terminals. The MSE will

93-685

6. Mission and Description (Cont'd):

be deployed to replace the existing Corps and Division communications systems covering the area from the Corps rear boundary to forward of the divisional maneuver brigades or a geographical area of 37,500 square km. The MSE system will provide necessary interfaces for communications with echelons above corps (EAC), the other services and NATO. Node centers will constitute the "backbone" of the MSE system and will provide connectivity to extension switches and Radio Access Units (RAUs) by means of UHF Multichannel Radio. These node centers provide a grid network that covers the entire Corps area of operation enabling subscriber access to the system anywhere in the area. The node centers are linked together by line-of-sight (LOS) radio assemblages. Each node center is linked to at least two and usually three other node centers so that communication is not lost if a link is lost or jammed. The system will automatically reroute traffic around damaged or jammed nodes or links. Extension switches provide Wire-line Terminal Subscribers (telephone, facsimile and data terminals) with a means of entry into the total area communications system. These extension switches are connected to the backbone grid network of node centers again by the LOS radio assemblages. The RAUs provide a means for Mobile Radiotelephone users to communicate with other mobile and wire telephone users throughout the area of operation. The RAUs can be collocated with a node center connected by cable or can be remoted from the node center by means of the LOS radio. The system offers subscribers a means of communication with each other on a discrete address, fixed directory basis, throughout the Corps area of operations.

7. Program Highlights:

a. Significant Historical Developments --

The MSE system was part of the TRI-TAC architecture and was initially identified as the division backbone communication system in the Army's INTACS Objective System, approved in Oct 76, and revalidated by TRADOC in Feb 81. The OSD Memorandum dated 13 Oct 79 approved the Joint Operational Requirement (JOR) for MSE and continued the assignment of the Army as the acquisition agent. The OSD Memorandum dated 8 Jan 80 approved the Mission Element Need Statement (MENS) for MSE. AMC was directed to proceed immediately with actions necessary to obtain the MSE system in a HQDA (DCSRDA) message dated 6 Aug 82. In Nov 82, guidance was received from the Under Secretary of the Army to procure MSE using a nondevelopmental approach. The JOR and MENS were updated and expanded to include corps and division in the MSE Operational Capabilities Document (MSEOCD) dated 24 May 84. The JOR and MENS identified MSE as a separate program from TRI-TAC and defined MSE as the corps and division common user area communication system. On 5 Nov 85, GTE was declared the winning contractor by the Secretary of the Army. On 19 Dec 85, the basic contract was signed and on 31 Dec 85, Option 1 of the contract was signed. On 19 Feb 87,

7a. Program Highlights (Cont'd):

Option 2 of the contract was signed. Follow-On Test and Evaluation (FOTE) was started on 9 Aug 88 and completed on 25 Oct 88. On 8 Dec 88, Option 3 of the contract was signed. On 8 Mar 89, Option 4 of the contract was signed. On 7 Apr 89, the existing contract option to include packet switching in MSE was executed. Field Verification Test (FVT) started on 12 Feb 90 and was completed on 23 Feb 90. Emerging results presented on 14 Mar 90 showed that MSE will provide at least a 90.4% Grade of Service (GOS) which is greater than the 90% specification requirement. On 20 Mar 90, Option 5 of the contract was signed. Of the 48 units to be fielded, thirty-nine have been fielded to date.

b. Significant Developments Since Last Report --
The MSE Acquisition Program Baseline contained schedules for the MSE Firefly program. On 4 Oct 92, the Army Acquisition Executive (AAE) approved the removal of the Firefly milestones from the MSE baseline and adjusted the associated costs.

Army units performed their mission with MSE during Operation Restore Hope. In addition, MSE was extensively utilized by Army units during their humanitarian support of aiding displaced people created by hurricanes Andrew and Iniki.

PM MSE is currently in the process of completing their required fielding. Of the 48 units to be fielded, 46 will be fielded by Sep 93 (Over 90% fielded); and therefore, MSE is requesting that the Selected Acquisition Reporting be terminated.

The MSE system is expected to satisfy the mission requirements.

c. Changes Since As Of Date -- None

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline (APB) dated October 4, 1992 and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Program Initiated	AUG 82	AUG 82	AUG 82
Issue Request for Proposal	JUL 84	JUL 84	JUL 84
Type Classification (STD) Approved	NOV 85	NOV 85	NOV 85

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Contract Award Basic Year	DEC 85	DEC 85	DEC 85
Contract Award Option Year 1	DEC 85	DEC 85	DEC 85
Contract Award Option Year 2	FEB 87	FEB 87	FEB 87
First Article Test			
Start	JUL 87	JUL 87	JUL 87
Complete	JAN 88	JAN 88	JAN 88
First Production Delivery (On-Site)	APR 88	FEB 88	FEB 88
First Delivered Unit Basic Year	APR 88	FEB 88	FEB 88
Destination Final Acceptance Test			
Start	FEB 88	FEB 88	FEB 88
Complete	APR 88	APR 88	APR 88
First Unit Equipped	MAY 88	MAY 88	MAY 88
User Follow-on Test and Evaluation			
Start	MAY 88	MAY 88	MAY 88
Complete	SEP 88	SEP 88	SEP 88
Contract Award Option Year 3	SEP 88	SEP 88	SEP 88
First Delivered Unit Option Year 1	SEP 88	SEP 88	SEP 88
Contract Award Option Year 4	MAR 89	MAR 89	MAR 89
First Delivered Unit Option Year 2	MAR 89	JUN 89	JUN 89
Field Verification Test of 90% GOS (C-1)			
Start	N/A	JAN 90	JAN 90
Complete	N/A	FEB 90	FEB 90
Operational Evaluation of Call Compl (C-1)	N/A	MAR 90	MAR 90
Contract Award Option Year 5	MAR 90	MAR 90	MAR 90
First Delivered Unit Option Year 3	MAR 90	MAR 90	MAR 90
Last Delivered Unit Option Year 2	N/A	JUL 90	JUL 90
Last Delivered Unit Option Year 3	N/A	JUL 91	JUL 91
Contract Award Option Year 6	MAR 91	N/A	N/A
First Delivered Unit Option Year 4	AUG 91	AUG 91	AUG 91
First Delivered Unit Option Year 5	SEP 92	SEP 92	SEP 92
Last Delivered Unit Option Year 4	N/A	OCT 92	OCT 92
Last Delivered Unit Option Year 5	N/A	OCT 93	OCT 93
Last Unit Fielding Completed	N/A	DEC 93	DEC 93

b. Previous Change Explanations --

First Delivered Unit Option Year 1, Option Year 2 and the Last Unit Fielding Completed Current Estimate were changed to reflect the current AAE Baseline, dated 26 Feb 90. Option Year 6 milestones were deleted due to funding reductions. Added Milestones (Last Delivered Unit Option Years 2, 3, 4, and 5) to reflect current APB Baseline,

9b. Schedule (Cont'd):
dated 26 Feb 90.

c. Current Change Explanations -- None

d. References --

Production Estimate:
FY87 President's Budget.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 October 1992.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demon-strated Perf	Current Estimate
Grade of Service (20% off-hook factor) (%)	N/A	90	/ 90	90.4	90
Set-up Time (node) (min)	30	30	/ 45	30	30
Tear Down Time (node) (min)	30	30	/ 45	45	45
Subscriber Switchboard Capacity					
Large Command Post	176	176	/ 150	176	176
Digital Transmission Groups	8	N/A	/ N/A	8	8
Small Command Post					
Switch Version 1	N/A	26	/ 19	26	26
Digital Transmission Groups	1	N/A	/ N/A	1	1
Switch Version 2	41	41	/ 30	41	41
Digital Transmission Groups	1	N/A	/ N/A	1	1
Mobile Subscriber Affiliation Capacity (per radio access unit)	N/A	50	/ 40	50	50
System Operating Temp (deg F) 1/	-40 to 120	-40 to +120	/ -35 to +110	-40 to +120	-40 to +120
MSE Radio Equip Frequency Ranges: (Mhz)					

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Ultra High Frequency					
Band I	225-400	225-400	/ 225-400	225-400	225-400
Band III	1350-1850	1350 - 1850	/ 1350 - 1850	1350 - 1850	1350 - 1850
Very High Frequency	30-88	30-88	/ 30-88	30-88	30-88

b. Previous Change Explanations -- None

c. Current Change Explanations -- None.

d. References --

Production Estimate:
FY87 President's Budget.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 October 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	0.0	0.0	0.0
Procurement	4428.5	3749.9	3873.2
Subscriber Terminals	(157.4)		(119.9)
Mobile Sub. Access	(548.2)		(404.0)
Wire Subscriber Access	(1198.2)		(889.8)
Area Coverage	(1587.4)		(1257.1)
System Control Center	(116.4)		(94.8)
Other Acq. Cost	(306.7)		(629.3)
Warranty	(166.3)		(134.1)
Contractor Fielding	(166.3)		(135.7)
Total Flyaway	(4246.9)		(3664.7)
Other Weapon system	(21.2)		(0.0)
Data			(16.9)
PM Admin			(15.4)
TPF, NET, CFSR			(50.1)
SUSV FOR 6ID			(1.8)
RDA Closed Account			(0.9)
Total Other Wpn Sys	(21.2)		(85.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(160.4)		(123.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 86 Base-Year $	4428.5	3749.9	3873.2
Escalation	705.5	806.9	623.6
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(705.5)	(806.9)	(623.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	5134.0	4556.8	4496.8

Initial Spares includes $4.6M for BA9714 line.

b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	48	48	48
Total	48	48	48

Note: The quantity of 48 units identified in the Current Estimate represents twenty-three Division Signal Battalions, eighteen Corps Signal Battalions, four separate Signal Platoons, one AADCOM, and two training sets for a total of $4496.8M. All user equipment located in the division/Corps areas have been included in the total program acquisition cost.

11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales/International Cooperative Programs -- None

d. Nuclear Costs -- None

e. References --

Production Estimate:
FY87 President's Budget.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 October 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	4496.8	4559.6	4496.8
(2) Quantity	48	48	48
(3) Unit Cost	93.683	94.992	93.683
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	52.0	52.0	50.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	52.0	52.0	50.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	5134.0	0.0	5134.0
Previous Changes:				
Economic	-	-2.1	-	-2.1
Quantity	-	+83.0	-	+83.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-644.0	-	-644.0
Other	-	-	-	-
Support	-	-11.3	-	-11.3
Subtotal	-	-574.4	-	-574.4
Current Changes:				
Economic	-	-18.9	-	-18.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-83.5	-	-83.5
Other	-	-	-	-
Support	-	+39.6	-	+39.6
Subtotal	-	-62.8	-	-62.8
Total Changes	-	-637.2	-	-637.2
Current Estimate	-	4496.8	-	4496.8

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	4428.5	0.0	4428.5
Previous Changes:				
Quantity	-	+69.3	-	+69.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-591.8	-	-591.8
Other	-	-	-	-
Support	-	-3.3	-	-3.3
Subtotal	-	-525.8	-	-525.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-59.7	-	-59.7
Other	-	-	-	-
Support	-	+30.2	-	+30.2
Subtotal	-	-29.5	-	-29.5
Total Changes	-	-555.3	-	-555.3
Current Estimate	-	3873.2	-	3873.2

b. Previous Change Explanations --

Procurement

Economic: Revised indices.

Quantity: Addition and reduction of units.

Estimating: Change due to revision of force structure requirements, reprogramming action, and extending the program.

Support: Incorporate NET, OMA transfer, and corrections to previous data and initial spares.

13c. **Cost Variance Analysis (Cont'd):**

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised escalation indices. (Economic)	N/A	-19.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.8
Adjustment for Current & Prior Inflation. (Estimating)	+8.2	+10.0
Revised costs for the enhancement program, system project management, sustainment installation kits for 6th Infantry Division and RDT&E closed account. (Estimating)	-67.9	-93.5
Increased initial spares requirement (Support)	+3.7	+4.9
Adjustment to Project Manager Office salaries and Total Package Fielding (Includes New Equipment Training & Contractor Field Service Representatives). (Support)	+26.5	+34.7
Procurement Subtotal	-29.5	-62.8

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
106.96	--	--	--	--	--	--	--	--	106.96

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
106.96	-0.44	1.75	--	--	-15.18	--	0.59	-13.28	93.68

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

RQMTS CONTR (IK'S ONLY):

GTE CORP, TAUNTON, MA
DAAB07-86-D-K023, FFP
Award: December 19, 1985
Definitized: December 19, 1985

Initial Contract Price		
Target	Ceiling	Qty
$40.9	N/A	9416

Current Contract Price		
Target	Ceiling	Qty
$37.8	N/A	9110

Estimated Price At Completion	
Contractor	Program Manager
$37.8	$37.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract price remained the same ($37.8M).

For this FFP Contract, Cost and Schedule Variance information is not required.

BASIC CONTRACT:

GTE CORP, TAUNTON, MA
DAAB07-86-C-K022, FFP
Award: December 19, 1985
Definitized: December 19, 1985

Initial Contract Price		
Target	Ceiling	Qty
$4145.7	N/A	48

Current Contract Price		
Target	Ceiling	Qty
$4131.2	N/A	48

Estimated Price At Completion	
Contractor	Program Manager
$4131.2	$4131.2

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract price changed from $4122.2M (Dec 91 SAR) to $4131.2M due to combination of award of Contractor's share of savings for VECPV6GK0221R1 (+$0.1M) and incorportion of the MSE Communication Network Simulator Phase II (CNS II) into the K022 contract (+$8.9M).

For this FFP Contract, Cost and Schedule Variance information is not required.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 60.0% (9 yrs/15 yrs)

(2) Percent Program Cost Appropriated: 98.2% ($4416.9 / $4496.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY85-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	-	-	-	-	-
Procurement	4416.9	50.4	6.6	22.9	4496.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4416.9	50.4	6.6	22.9	4496.8

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army								
1985	1		60.6	61.5	63.3	63.3	63.3	3.4
1986	1		303.3	315.4	335.3	335.3	335.3	2.8
1987	11		792.5	821.5	903.7	903.6	897.7	2.7
1988	12		855.1	885.8	1019.8	1019.7	996.5	3.0
1989	12		799.6	832.2	986.4	986.2	896.5	4.2
1990	11		734.5	766.0	937.4	937.0	560.8	4.0
1991		29.0		29.0	36.5	36.5	10.3	4.3
1992		33.1		64.1	82.5	77.5	38.3	2.8
1993		19.3		39.4	52.0	16.2	0.1	2.4
1994		25.2		37.6	50.4			2.4
1995		3.0		4.8	6.6			2.3
1996		2.9		4.7	6.5			2.3
1997		2.3		3.9	5.5			2.2
1998		2.2		3.7	5.5			2.2
1999		2.1		3.6	5.4			2.2
Subtot	48	119.1	3545.6	3873.2	4496.8	4375.3	3798.8	
Grand Total	48	119.1	3545.6	3873.2	4496.8	4375.3	3798.8	

16c. **Program Funding Summary (Cont'd):**
FY94 includes $4.6M under BA9714 for MSE Spares and $45.8M under BB1610; both under MDEP FPMC.

17. **Production Rate Data:**

a. Production Baseline Rate

There is no production rate data for the MSE program. The basic MSE system was fully procured in FY90 and fielding completed by early FY94. A separate Mod-in-Service line was approved for the "Wart repairs" starting in FY95. The FY94 program has varying "Wart repairs" to the basic MSE system along with in-house costs to monitor the last fieldings and the "Wart repairs." The FY95 program is strictly in-house costs to monitor the Mod-in-Service line.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	50.4	0.0	-50.4	-50.4
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	6.6	0.0	-6.6	-6.6
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	22.9	0.0	-22.9	-22.9

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	39/39

d. Approved Design-to-Cost Objective -- N/A.

18. **Operating and Support Costs:**

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The MSE system will be utilized in a peacetime mode for 8.2 hours per day, 7 days per week with an annual operating time of 2,996.4 hours. The costs are the direct/indirect costs to support the primary personnel and to operate the system. The cost of military personnel and indirect support operations were estimated from Tables of Organization and Equipment (TOEs) developed for the MSE System. Costs applied for the military personnel were from the composite standard rates for costing military personnel services. For the nonstandard Communications-Electronics (C-E) equipment, the summary costs for replenishment spares were calculated by the Optimum Supply and Maintenance Model (OSAMM) using MTBF, washout rates and estimated qualitative data from the contractor together with weighted average unit prices developed from fixed range prices in the contract. For standard C-E equipment, estimates were developed through OSAMM using reliability data furnished by the contractor and unit price data from CECOM. The non C-E equipment costs for vehicles, generators and trailers were developed from historical data furnished by the TACOM and TROSCOM. The non C-E maintenance action costs were furnished by the contractor and the C-E maintenance action costs were obtained from the CECOM Directorate of Maintenance Engineering (DME). The petroleum, oil and lubricants (POL) cost is based on the number and type of vehicles and generators, the operating scenario (4,243 miles driven per year for active forces and 419 miles driven per year for the reserve forces), fuel economy and cost factors for gas and oil. All the O&S costs were based on a life cycle of 17.5 years of deployment. The 17.5 year deployment is comprised of 15 years of a fully deployed MSE system plus an additional 2.5 years to account for the 6 years of a partially deployed MSE system. There is no antecedent system for MSE. The Average Annual O&S cost per MSE system is based on a quantity of 48 units which represents twenty-three division Signal Battalions, eighteen Corps Signal Battalions, one AADCOM, four separate Signal Platoons, and two training sets. All user equipment located in the division/corps areas has been included in the total program acquisition cost.

Reference: Jun 91 Baseline Cost Estimate (BCE).

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per MSE System	Avg Annual Cost Per
Personnel	12.6	N/A
Replenishment Spares	0.7	N/A
Depot Maintenance	1.1	N/A
POL	0.2	N/A
Total	14.6	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	17.3	27.8	30.0	364.0	439.1
Total	17.3	27.8	30.0	364.0	439.1

The Contractor Support Costs represent PM MSE most current information. The numbers reflect Contractor Logistics Support, Depot Maintenance, and Life Cycle Software Engineering (LCSE). Balance To Complete reflects years FY96-08.

N-32 SSN 21/ AN/BSY-2 ~~SECRET~~ [redacted]

92-139

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SSN-21 CLASS/BSY-2

AS OF DATE: December 31, 1992

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AS AMENDED
AS CLEARED
FOR OPEN PUBLICATION

MAY 26 1993 9

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
HIGH SPEED NUCLEAR ATTACK SUBMARINE & COMBAT SYSTEM

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

SEAWOLF PROGRAM MANAGER — CAPT O.V. COMBS
NATIONAL CENTER 3, ROOM 7N24 — Assigned: October 1, 1992
PMS350 — AV 332-7201 COMM 703-602-7201
ARLINGTON, VA 20362-5101

AN/BSY-2 SCS PROGRAM MANAGER — CAPT Hubert D. Hopkins
NATIONAL CENTER 2, ROOM 11W88 — Assigned: July 31, 1992
ARLINGTON, VA 20362-5101 — AV 332-0056 Comm 703-602-0056

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604567N, 0603561N, 0603562N, 0603569N, 0603570N, 0604561N
PE 0604524N (Shared) Project S1347, S1941

[redacted]

[redacted]

[redacted]

OASD(PA) DFOISR 93-M-700

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 1611 ICN 0204281N (Navy)
APPN 1810 ICN 0204283N (Navy) (Shared)
APPN 1810 ICN 0804731N (Navy) (Shared)
APPN 1810 ICN 0204281N (Navy) (Shared)
MILCON:
PE 0204896N, 0804731N (Shared)

5. (U) Related Programs:

PE 63560N,	PROJECT S0222	SUBMARINE HULL ARRAY DEVELOPMENT (ADV)
PE 63569N,	PROJECT S1974	ADV SUB TECH
PE 64502N,	PROJECT S0742	SUBMARINE INTEGRATED ANTENNA SYSTEM
PE 64502N,	PROJECT S1411	SUBMARINE TACTICAL COMMUNICATION SYSTEM
PE 64520N,	PROJECT S0198	SUBMARINE HULL ARRAY DEVELOPMENT (ENG)
PE 64562N,	PROJECT S2036	SUBMARINE TACTICAL WARFARE SYSTEMS
PE 63367N,		ANTI-SUBMARINE WARFARE STANDOFF WEAPONS
PE 63691N,		MK 48 ADVANCED CAPABILITIES TORPEDO
PE 24229N,		TOMAHAWK
PE 64601N,		SUBMARINE LAUNCHED MOBILE MINE
PE 64503N,		SUBMARINE SONAR DEVELOPMENT
PE 64507N,		ENHANCED MODULAR SIGNAL PROCESSOR
PE 64514N,		NAVIGATION SYSTEMS
PE 63560N,		SUBMARINE HULL ARRAY DEVELOPMENT
PE 64515N,		SUBMARINE SURVEILLANCE EQUIPMENT
PE 63530N,		OVER-THE-HORIZON EQUIPMENT
PE 78017N,		HARPOON

6. (U) Mission and Description:
To seek out and destroy enemy ships across a wide spectrum of tactical scenarios, working both independently and in consort with a battle group/other ships, providing Joint Commanders with early, accurate knowledge of the battlefield on which power may be projected from sea; covert striking power against targets ashore; the capability to establish an expeditionary force on land; and the maritime strength to destroy enemy naval forces and interdict seaborne commerce.

The AN/BSY-2 Submarine Combat System supports the SSN mission to conduct prompt and sustained combat operations. The warfare tasks supporting this mission are: Strike Warfare, Anti-Submarine Warfare (ASW), Surveillance/Indication and Warning, Anti-Surface Warfare, Mine Warfare, Special Warfare; Ocean Surveillance, Intelligence/Reconnaissance, Command, Control, and Communication (C3), and Electronic Warfare.

The AN/BSY-2 Submarine Combat System improves upon existing combat systems to meet the expanded operational requirements of attack

6. (U) Mission and Description (Cont'd):

submarines in countering the future threat. The AN/BSY-2 Submarine Combat System provides combat control and acoustic functions to support the ship characteristics of the SSN-21.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In June 1982, the SSN21 Class submarine program commenced with the establishment of GROUP TANGO to assess the need for an advanced technology submarine. In December 1982, CNO directed NAVSEA to proceed with feasibility studies. In June 1983, SECNAV approved the conceptual design of the SSN21, and a new start was authorized by a Program Decision Memorandum in August 1983. In December 1983, SECNAV and SECDEF approved proceeding with preliminary design. Preliminary design contracts subsequently were awarded to General Dynamics - Electric Boat (EB) and Tenneco - Newport News Shipbuilding (NNS).

In June 1984, a Secretary of Defense Decision Memorandum, authorized the Navy to proceed with the preliminary design phase for the lead ship of the SSN 21 Class. The preliminary design phase was completed in May 1985. Authorization to proceed with detail design of the SSN21 was granted by OSD on 2 October 1986. Contract Design contracts with both NNS and EB were completed in 1986. A detail design contract with NNS as lead design yard was signed in April 1987. The contract for the SSN21 was awarded to EB on January 9, 1989. Ship construction commenced on 25 October 1989. Construction has commenced on all major hull sections.

In January 1991, a combined SSN21 and BSY-2 program review was held with the Defense Acquisition Board (DAB). The Acquisition Decision Memorandum (ADM) was signed 15 February 1991 approving continued Low Rate Initial Production (LRIP) of SSN21 Class Submarines and AN/BSY-2 combat system through completion of operational testing in FY98.

On 3 May 1991, the contract for the FY91 submarine, the SSN22, was awarded to EB. The competing shipbuilder, NNS, immediately filed suit in the United States District Court for the Eastern District of Virginia. On 31 July 1991 [t]he court declared that the award of the contract violated the statutes and regulation of the United States and was void. The court further ordered the Navy to resolicit bids, and to place the parties in the same relative position that they occupied when the Navy received the bids. On 7 August 1991, the Court granted a stay to its injunction against proceeding with performance under the contract awarded to EB with certain limitations. A notice of appeal was filed with the court by the Navy on 6 September 1991.

An original Submarine Combat System program, SUBACS, was initiated in

7a. (U) Program Highlights (Cont'd):

1981. Full Scale Development began in December 1983. Technological problems caused restructuring of the program in June 1985 into two discrete segments: AN/BSY-1 and a new system, the FY89 Submarine Combat System (subsequently renamed AN/BSY-2). AN/BSY-2 Design Definition began in early 1986 with the award of contracts to the Missile and Surface Radar Division of RCA (subsequently acquired by General Electric Company) and Federal Systems Division of IBM. Milestone I approval was granted in October 1986. A Sustaining Engineering contract was awarded to General Electric Company on 11 December 1987. The original Program Baseline Document, was approved on 7 March 1988. Milestone II approval was granted on 9 March 1988. The contract for Full Scale Development was awarded to General Electric Company on 31 March 1988. Limited Production options for the SSN21 system were exercised December 1988.

b. (U) Significant Developments Since Last Report --
On 28 January 1992, the SSN21/BSY-2 program was truncated after lead ship. The proposed rescission package zeroed all FY93 and outyear funding in the budget. As directed by ASN memo of 14 February 1992, stop work orders were issued on all active contracts for the SSN22 and later ships. Subsequently, on 19 March 1992 selected stop work orders for components that had a high percentage of completion and were usable as shore/insurance spares were lifted. On 4 June 1992, Public Law 102-298 reinstated the SSN22. With the reinstatement, all stop work orders associated with SSN22 were lifted. Contractors' Request for Equitable Adjustments (REAs) for the effects of the Stop Work Orders and Terminations are being submitted.

On 16 March 1992, the United States Court of Appeals for the Fourth Circuit ruled in the Navy's favor on appeal of the SSN22 decision. In July 1992, the United States District Court for the Eastern Division of Virginia dismissed the case. Ship construction stop work was lifted and construction on the SSN22 commenced. On 9 November 1992, the Shipbuilder submitted an REA for the stop work period. The Navy is evaluating their proposal.

A significant portion of the ship's hull has completed major hull welding and outfitting of major components such as the forward trim tanks and the torpedo tubes has begun. Large contractor furnished equipments and government furnished equipments are being installed in the hull sections.

As a result of the SEAWOLF Program downsizing, a Stop Work Order was invoked on the AN/BSY-2 Limited Production FY91 and FY92 systems in February 1992. The FY91 Stop Work Order was cancelled in March and the FY92 Stop Work Order was cancelled in July 1992. These Stop Work Orders caused significant delay and disruption at GE. The AN/BSY-2

7b. (U) Program Highlights (Cont'd):

Team Trainer development contract awarded in February 1991 was cancelled in April 1992.

Production of AN/BSY-2 hardware is proceeding on schedule to meet delivery to the ship. The complete AN/BQG-5 Wide Aperture Array (WAA) outboard hardware and Common Electronics Equipment Enclosure has been delivered to Portsmouth Naval Shipyard and is undergoing installation on USS AUGUSTA (SSN710). Final delivery of electronics modules and software is on schedule for delivery in Fall 1993.

Software tests have been conducted for 30% of the 125 software units in AN/BSY-2, and integration is underway for the WAA subsystem. Ada software products coming out of initial testing are showing good quality. The rate of software test completion is a major cost and schedule risk, however, recent trends show improving performance.

AN/BSY-2 completed its Critical Item Test program during this period.

Delivery of AN/BSY-2 hardware and software is on schedule for delivery as required to SEAWOLF in February 1995.

THIS SYSTEM WILL SATISFY MISSION REQUIREMENTS.

c. (U) Changes Since As Of Date — None.

8. (U) Threshold Breaches:
There are breaches to the Approved Program Baseline dated January, 28 1992 in the areas of R&D and Procurement costs and schedule, and there are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones —

	Production Estimate	Approved Program	Current Estimate
SSN-21 Submarine			
Program Initiated	JUL 82	N/A	JUL 82
Milestone I (DSARC I)	DEC 83	N/A	DEC 83
Milestone II (DSARC II)	JUN 85	N/A	JUN 85
FSD Contract Award	JUL 85	N/A	JUL 85
Milestone IIB (JRMB)	OCT 86	N/A	OCT 86
Milestone IIIA	JUN 88	JUN 88	JUN 88
First Production Contract Award	JAN 89	JAN 89	JAN 89
DAB Review	MAR 90	N/A	MAR 90

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Production Estimate	Approved Program	Current Estimate
(b)(1)			

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Production Estimate	Approved Program	Current Estimate
(b)(1)			

9b. (U) Schedule (Cont'd):

CCAPS program has been terminated.

c. (U) Current Change Explanations —

CH-1: Requirement deleted as a result of program truncation.
New requirement pending.

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1) [redacted]				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10d. (U) Performance Characteristics (Cont'd):

d. (U) References —

(U) Production Estimate:
Production Estimates: DCP, SEAWOLF (SSN21) Class Submarine dated 11 May 1988.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost —			
Development (RDT&E)	4335.0	3903.4	4573.6
Procurement	15686.3	3496.3	5443.5
Basic Ship Costs	(8083.6)		(3023.6)
GFE	(5952.8)		(2059.7)
Other Sailaway	(111.0)		(55.9)
OF/PD	(570.2)		(106.0)
Total Sailaway	(14717.6)		(5245.2)
OPN	(0.0)		(0.0)
AN/BSY-2 OPN	(968.7)		(198.3)
Total Other Wpn Sys	(968.7)		(198.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	98.6	25.3	27.4
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	20119.9	7425.0	10044.5
Escalation	1619.2	96.6	342.6
Development (RDT&E)	(-125.0)	(-133.6)	(-23.1)
Procurement	(1735.1)	(228.2)	(363.1)
Construction (MILCON)	(9.1)	(2.0)	(2.6)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	21739.1	7521.6	10387.1
b. (U) Quantity —			
Development (RDT&E)	0	0	0
Procurement	12	1	2
Total	12	1	2

c. (U) Foreign Military Sales/International Cooperative Programs — None.

d. (U) Nuclear Costs — $1071.3M

11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References —

(U) Production Estimate:
Production Estimates: DCP, SEAWOLF, (SSN21) Class Submarine dated 11 May 1988.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	10387.1	7521.6	10387.1
(2) Quantity	2	1	2
(3) Unit Cost	5193.55	7521.60	5193.55
b. (U) Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	324.9	324.9	23.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	324.9	324.9	23.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	4210.0	17421.4	107.7	21739.1
Previous Changes:				
Economic	-103.4	+511.4	+3.3	+411.3
Quantity	-	-18755.5	-	-18755.5
Schedule	-	+6336.5	-	+6336.5
Engineering	+144.8	-	-	+144.8
Estimating	-536.2	+88.3	-83.7	-531.6
Other	-	-	-	-
Support	+54.6	-1877.6	-	-1823.0
Subtotal	-440.2	-13696.9	-80.4	-14217.5
Current Changes:				
Economic	-1.0	-65.5	+0.2	-66.3
Quantity	-	+1104.2	-	+1104.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+781.7	+945.5	+2.5	+1729.7
Other	-	-	-	-
Support	-	+97.9	-	+97.9
Subtotal	+780.7	+2082.1	+2.7	+2865.5
Total Changes	+340.5	-11614.8	-77.7	-11352.0
Current Estimate	4550.5	5806.6	30.0	10387.1

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	4335.0	15686.3	98.6	20119.9
Previous Changes:				
Quantity	-	-15215.9	-	-15215.9
Schedule	-	+4353.8	-	+4353.8
Engineering	+127.8	-	-	+127.8
Estimating	-611.7	+83.6	-73.3	-601.4
Other	-	-	-	-
Support	+52.3	-1411.5	-	-1359.2
Subtotal	-431.6	-12190.0	-73.3	-12694.9
Current Changes:				
Quantity	-	+996.9	-	+996.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+670.2	+871.2	+2.1	+1543.5
Other	-	-	-	-
Support	-	+79.2	-	+79.2
Subtotal	+670.2	+1947.3	+2.1	+2619.6
Total Changes	+238.6	-10242.7	-71.2	-10075.3
Adjustments	-	-0.1	-	-0.1
Current Estimate	4573.6	5443.5	27.4	10044.5

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised Indices SSN21 and AN/BSY-2
Engineering: Block Upgrade program added (AN/BSY-2)

Cost estimate for transitioning from EMSP Standard Electronic Module (SEM) format B to SEM format E (AN/BSY-2)
Estimating: Revised program requirements (SSN21)
Refined cost estimates (SSN21)
reduced lab tasking (AN/BSY-2)
Partial funding for OPEVAL missile procurements

13b. (U) Cost Variance Analysis (Cont'd):

(AN/BSY-2)
Addition of Engineering Change Proposals

Support: AN/BSY-2 Team Trainer tactical equipment reprogrammed from FY91 OPN
LSA conversion reprogrammed from FY91 O&M,N

Procurement

Economic: Revised Indices

Quantity: Deletion of 3 systems in FY94 as a result of large lot procurement (SSN21)
Addition of 3 systems (FY98-2, FY99-1)
Program Termination

Schedule: 3 systems in FY92 to FY93 (SSN21)
Change in acquisition strategy reflecting 75% reduction in planned submarine construction workload

Estimating: Refined Program Requirements and large lot procurement savings (SSN21)
Refinement of estimates to reflect later contract/pricing data (SSN21)
Reduction in quantity due to program termination

Support: Revised Outfitting and Post Delivery requirements (SSN21)
FY91 AN/BSY-2 Team Trainer reprogrammed to RDT&E (AN/BSY-2)
Revised cost estimates for Maintenance Trainers, Team Trainer Tactical and Trainer Unique Equipment, and associated spares (AN/BSY-2)
Addition of OPN costs
OF/PD Refined Cost Estimate
Program Termination
Two An/BQG-5 Team Trainers (TTs) deleted (AN/BSY-2)
Revised test equipment and spares estimates (AN/BSY-2)
Reduced SSF configuration and upgrades; reduced Trainer Unique Equipment (TUE) for FY93 and FY94 (AN/BSY-2)
Deleted AN/BQG-5 Maintenance Trainer (MT), 2 TTs, Intermediate Maintenance Activity (IMA) and associated Maintenance Assistance Modules (MAMs) and Associated Spare Parts Kits (ASPKs) (AN/BSY-2)
Deleted AN/BSY-2 MT #2, 2 TTs and spares, 2 new Module Screening And Repair Activities (MSRAs) and changed 2 new MSRAs to upgrades (AN/BSY-2)
Corrected previous changes incorrectly categorized as quantity and estimating

13b. (U) Cost Variance Analysis (Cont'd):

MILCON
Economic: Revised Indices
Estimating: Refined Program Requirements
Program Termination
Incorrect addition of Non-SEAWOLF specific project.

c. (U) Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.8	+1.0
Reinstatement of RDT&E (Estimating)	+673.5	+785.2
Reduction of Prior Year Funding (Estimating)	-4.1	-4.5
RDT&E Subtotal	+670.2	+780.7
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-66.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.2
Quantity Variance resulting from restoration of SSN22 (Quantity)	+996.9	+1104.2
Reestimate for Program resulting in increased funding (Estimating)	+473.4	+528.4
Corrections to original recission data (Estimating)	+397.9	+423.6
Adjustment for Current & Prior Year Inflation (Estimating)	-0.1	-6.5
Reinstatement of OPN 93-99 Budget (Support)	+37.6	+46.6
Increase in OF/PD associated with reinstatement of SSN22 (Support)	+41.6	+51.3
Procurement Subtotal	+1947.3	+2082.1
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.2

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.2
Increase in outyear budget controls previously omitted (Estimating)	+2.3	+2.7
MILCON Subtotal	+2.1	+2.7

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate —

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3875	-24	-2167	—	—	76	—	52	-2063	1812

b. (U) Current Baseline Estimate to Current Estimate —

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1812	172.5	232.3	3168.3	72.4	599.1	—	-862.6	3382.0	5194

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E —

(U) AN/BSY-2 FSD:

	Initial Contract Price		
	Target	Ceiling	Qty
GENERAL ELECTRIC COMPANY, SYRACUSE, NY N00024-88-C-6150, FPIF Award: December 11, 1987 Definitized: December 11, 1987	$965.5	$1097.7	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1007.3	$1145.3	2	$1046.9	$1076.9

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-87.1	$-44.5
Cumulative Variances To Date (12/27/92)	$-118.6	$-15.9
Net Change	$-31.5	$28.6

Explanation of Change:

The change in cost variance is primarily attributed to increased costs in acoustic software at GE Syracuse, weapons software at Librascope, and additional efforts at GE Syracuse associated with the transfer of software development efforts from GE Moorestown and Librascope. The change in schedule variance is primarily attributed to completion of hardware manufacturing efforts at Librascope and GE Moorestown; completion of command and decision software milestones and combat system services software milestones at Computer Sciences Corporation and GE Moorestown, and receipt of overdue material at GE Syracuse. The Program Manager's estimated price at completion, which is based on contractor cost and schedule performance to date, decreased by $0.5M since the last SAR.

Note: The initial and current contract prices and estimated prices at completion do not include the $35.9M performance incentive fee pool. Option Items 0039, 0001-0018 and 0031 have been exercised and are included in the current contract prices.

b. (U) Procurement —

(U) SSN21 CONSTRUCTION:
GENERAL DYNAMICS, GROTON, CT
N00024-89-C-2000, FPIF
Award: January 9, 1989
Definitized: January 9, 1989

Initial Contract Price		
Target	Ceiling	Qty
$726.0	$928.7	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$795.2	$1018.4	1	$974.9	$995.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-30.1	$-70.9
Cumulative Variances To Date (12/26/92)	$-48.6	$-81.9
Net Change	$-18.5	$-11.0

Explanation of Change:

The change in cost and schedule variances since last year are attributable to a number of factors, such as: insufficient manning and planning, late design data, late ordering and late receipt of CFE material. The Program Manager, Design Yards and the Shipbuilder are

15. (U) Contract Information (Cont'd):
aggressively managing a corrective plan of action which should minimize future cost and schedule growth.

(U) SSN21 DETAIL DESIGN:	Initial Contract Price Target	Ceiling	Qty
TENNECO, Newport News, VA N00024-87-C-2046, CPFF Award: April 30, 1987 Definitized: June 20, 1990	$333.0	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$532.5	N/A	0	$681.5	$663.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-81.7	$-53.1
Cumulative Variances To Date (12/31/92)	$-118.2	$-19.6
Net Change	$-36.5	$33.5

Explanation of Change:

The negative cost variance is attributable to the degree of technical complexity of the drawings being delivered and vendor based driven issues required to support the shipbuilder.

(U) SSN21 (NUCLEAR):	Initial Contract Price Target	Ceiling	Qty
Westinghouse Elec Corp, Monroeville, PA N00024-87-C-4000, CPFF Award: November 7, 1986 Definitized: November 7, 1986	$70.2	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$235.7	N/A	0	$350.0	$350.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

The Navy has waived the cost/schedule control systems requirement for Naval Nuclear Propulsion Program procurements.

15. (U) Contract Information (Cont'd):

(U) SSN21 (NUCLEAR):
General Electric Company, Schenectady, NY
N00024-87-C-4001, CPFF
Award: November 7, 1986
Definitized: November 7, 1986

Initial Contract Price		
Target	Ceiling	Qty
$88.0	N/A	N/A

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$299.3	N/A	N/A	$310.0	$310.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

The Navy has waived the cost/schedule control system requirement for Naval Nuclear Propulsion Program procurements.

(U) SSN22 CONSTRUCTION:
GENERAL DYNAMICS, GROTON, CT
N00024-91-C-2902, FPIF
Award: May 3, 1991
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$610.2	$758.3	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$610.3	$758.5	1	$758.2	$822.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Construction commenced on 14 September 1992. The initial Cost Performance Report was received for the quarter ending 31 December 1992. Several quarters of data will be required to establish trends.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status —

(1) Percent Program Completed: 68.4% (13 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 92.4% ($9597.3 / $10387.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	3937.5	188.0	137.8	287.2	4550.5
Procurement	5632.5	23.0	38.1	113.0	5806.6
MILCON	27.3	-	1.5	1.2	30.0
O&M	-	-	-	-	-
Total	9597.3	211.0	177.4	401.4	10387.1

c. (U) Annual Summary —

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1981				20.7	15.2	15.2	15.2	10.6
1982				30.7	23.7	23.7	23.7	7.6
1983				29.9	24.1	24.1	24.1	4.9
1984				157.4	131.6	131.6	131.6	3.8
1985				334.1	288.1	288.1	288.1	3.4
1986				457.4	405.7	405.7	405.7	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1987				435.9	398.1	398.1	396.2	2.7
1988				470.0	443.6	443.6	442.5	3.0
1989				519.3	510.8	510.4	507.8	4.2
1990				518.5	530.8	530.7	529.7	4.0
1991				517.2	548.5	547.7	525.0	4.3
1992				409.0	445.1	445.1	374.7	2.8
1993				154.6	172.2	101.4	10.6	2.4
1994				164.9	188.0			2.4
1995				118.1	137.8			2.3
1996				91.2	108.8			2.3
1997				91.1	111.1			2.2
1998				33.6	41.8			2.2
1999				20.0	25.5			2.2
Subtot				4573.6	4550.5	3865.4	3674.9	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1987				377.1	375.0	375.0	335.6	1.5
1988				253.2	257.6	257.6	214.5	2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1989	1		2507.1	1623.4	1687.7	1600.4	1050.9	2.8
1990			370.3	552.6	586.3	585.6	285.7	1.3
1991	1		2156.1	1643.3	1781.7	1466.7	393.6	1.3
1992			211.7	403.2	447.1	410.9	148.4	1.7
1993				286.5	324.9	73.3		2.4
1994				16.8	19.5			2.4
1995				27.8	32.9			2.3
1996				35.8	43.4			2.3
1997				20.6	25.5			2.2
1998				4.9	6.2			2.2
Subtot	2		5245.2	5245.2	5587.8	4769.5	2428.7	

Recurring Flyaway in FY89-92 includes SSN23, SSN24 and SSN25 authorized appropriated funding.

Appropriation: 1810 Other Procurement, Navy

1989				0.6	0.6	0.6	0.6	4.2
1990				142.3	152.2	152.2	148.2	4.0
1991				17.8	19.4	19.4	7.9	4.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1992								2.8
1993								2.4
1994				3.0	3.5			2.4
1995				4.4	5.2			2.3
1996				8.6	10.5			2.3
1997				7.9	9.8			2.2
1998				8.6	11.0			2.2
1999				5.1	6.6			2.2
Subtot				198.3	218.8	172.2	156.7	
Appropriation: 1205 Military Construction, Navy								
1991				25.1	27.3	27.3	12.7	4.3
1992								2.8
1993								2.4
1994								2.4
1995				1.3	1.5			2.3
1996								2.3
1997				1.0	1.2			2.2

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1205 Military Construction, Navy (Cont'd)								
Subtot				27.4	30.0	27.3	12.7	
Grand Total	2		5245.2	10044.5	10387.1	8834.4	6273.0	

17. (U) **Production Rate Data:**

a. (U) Production Baseline Rate

Not required for programs that produce at a rate of less than 6 items per year.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		23.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		38.1		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		113.0		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

17d. (U) Production Rate Data (Cont'd):

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S cost driving characteristics for the SEAWOLF Class are that each ship has a 30 year service life, displaces 9150 tons, has a crew of 134 officers/enlisted and a maintenance cycle which has 1 midlife overhaul and 8 SRAS. There are 32-33 months between depot level availabilities. (The source for this information is the CAIG - Cost Analysis Improvement Group report dated 30 April 1990.

The O&S costs are under review.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SHIP	Avg Annual Cost Per SHIP
PERSONNEL	3.6	N/A
O&S CONSUMABLES	3.5	N/A
DIRECT DEPOT MAINTENANCE	20.2	N/A
OTHER DIRECT COSTS	3.7	N/A
INDIRECT COSTS	5.9	N/A
Total	36.9	N/A

c. (U) Contractor Support Costs -- None.

The SEAWOLF program has no O&MN or industrial fund contractor support costs.

N-37 T-AO 187

92-067

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: T-AO 187 OILER

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
   T-AO 187 CLASS FLEET OILER

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
   Naval Sea Systems Command (PMS383) CAPT Theodore Doroshenk, USN
   Zachary Taylor Building (NC#3) Assigned: August 2, 1991
   2531 Jefferson Davis Highway AV 332-3507 COMM (703) 602-3507
   Arlington, VA 22242-5160

4. Program Elements/Procurement Line Items:

   RDT&E:
   PE 0603564N Project 0408 (Shared)
   PE 0604567N Project 0857 (Shared), 1803 (Shared)
   PROCUREMENT:
   APPN 1611 ICN 5030 (Navy)

5. Related Programs:

AOE 6 CLASS FAST COMBAT SUPPORT SHIP

AS AMENDED
FOR OPEN PUBLICATION

MAY 26 1993 22

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
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6. **Mission and Description**:
MISSION: The T-AO 187 Fleet Oiler Class operates independently or as a unit of an underway replenishment group to furnish petroleum/oil/lubricants (POL) products to fleet operating forces. The ship transports bulk POL from shore depots to Fast Combat Support Ships (AOE), Replenishment Oilers (AOR), and other Fleet Oilers (AO and T-AO) effecting delivery and consolidation underway. The ship delivers bulk POL, delivers and receives fleet freight, mail, and personnel, and replenishes combatants and support forces underway and in port. The ship is capable of replenishing from five stations simultaneously.

DESCRIPTION: A 180,000 barrel capacity, twin screw, 20 knot sustained speed, diesel driven Fleet Oiler with a 677'5" overall length, a 97'5" foot beam, and a 36'0" maximum navigational draft. Accommodations are for 137, including: Ship's Company 104 (Military Sealift Command crew 96, growth 8), Navy Command, Control, and Communications Team 23, and transient personnel 10.

7. **Program Highlights**:
a. Significant Historical Developments --
The T-AO 187 Fleet Oiler Class program was approved by NDCP #S0859 on 7 DEC 81. A production contract for the first four ships (T-AOs 187, 188, 189, and 190) was awarded to Avondale Industries Inc. (AII) on 12 NOV 82. The last of these ships was delivered on 22 OCT 87.

A contract for T-AOs 191 and 192 was awarded to Penn Ship on 5 MAY 85. Options for T-AOs 194 and 196 were executed on 26 FEB 86 and 12 FEB 87, respectively. On 28 AUG 89, the contract with Penn Ship was terminated by default due to non-performance.

On 16 NOV 89, a contract was awarded to Tampa Shipyards Inc. (TSI) to complete construction of T-AOs 191 and 192. The contract was definitized on 29 JUN 90.

Penn Ship and AII negotiated a transfer agreement for T-AOs 194 and 196 on 16 JUN 88. T-AOs 194 and 196 were delivered on 18 MAR 91 and 6 DEC 91, respectively.

On 28 JUN 85, AII was awarded a one-plus-two, option-type, fixed price incentive (FPI) subject to escalation contract for the T-AO 193. Options for T-AOs 195 and 197 were executed on 27 FEB 86 and 12 FEB 87 respectively. T-AOs 193, 195, and 197 were delivered on 13 SEP 88, 2 AUG 89, and 6 JUL 90, respectively.

On 20 JUN 88, AII was awarded a one-plus-six, option-type, firm fixed price subject to escalation contract for the T-AO 198. The option for follow ships (T-AOs 200, 202, and 204) was exercised on 6 OCT 88 and for the second flight (T-AOs 199, 201, and 203) on 24 MAR 89.

7a. Program Highlights (Cont'd):

T-AOs 198, 200, and 199 were delivered on 21 MAY 92, 25 SEP 92, and 8 FEB 93, respectively.

b. Significant Developments Since Last Report -- T-AO 191/192

(b)(4)

[redacted]

T-AOs 198, 200, 199 were delivered on 21 MAY 92, 25 SEP 92, and 8 FEB 93, respectively.

This system will satisfy mission requirements.

c. Changes Since As Of Date -- T-AO 199 delivered on 8 FEB 93.

8. Threshold Breaches:
There are no breaches to the Approved Program Baseline (APB) dated 4 JAN 93 and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
CNO Executive Board	JUN 80	JUN 80	JUN 80
Milestone I (DSARC)	MAR 80	MAR 80	MAR 80
Characteristics Approved	FEB 81	FEB 81	FEB 81
DCP #S0859 Approved	DEC 81	DEC 81	DEC 81
Production Contract Award	NOV 82	NOV 82	NOV 82

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Exercise Option for T-AO 188	N/A	JAN 83	JAN 83
Exercise Option for T-AO 189/190	N/A	NOV 83	NOV 83
Production Started (First Ship)	APR 84	APR 84	APR 84
Award of T-AO 191/192 (Second Source)	N/A	MAY 85	MAY 85
Award of T-AO 193 (Lead Source)	N/A	JUN 85	JUN 85
Launch 1st Ship	AUG 85	OCT 85	OCT 85
Exercised Option for T-AO 194/195	N/A	FEB 86	FEB 86
Exercised Option for T-AO 196/197	N/A	FEB 87	FEB 87
Award Contract for T-AO 198	N/A	JUN 88	JUN 88
Exercise Option for T-AO 200/202/204	N/A	OCT 88	OCT 88
Exercise Option for T-AO 199/201/203	N/A	MAR 89	MAR 89
Acceptance Trials: 1st Ship	JUL 86	N/A	SEP 86
Delivery: 1st Ship	SEP 86	N/A	DEC 86
Initial Operating Capability	NOV 86	NOV 86	FEB 87
Last T-AO Delivery	AUG 93	APR 96	APR 96 (Ch-1)

b. Previous Change Explanations --

LAUNCH 1ST SHIP: The delay from AUG 85 to OCT 85 was due to reduction gear/on-board repair parts shortages.

INITIAL OPERATING CAPABILITY: The delay from NOV 86 to FEB 87 was due to the change in the fitting out period caused by the delay in delivery.

LAST T-AO DELIVERY: The delay from AUG 93 to JUN 94 was due to the buyout of the T-AO 187 Class Program in FY89 vice FY90. The delay from JUN 94 to NOV 94 was due to the ripple effect of delays in delivery of earlier ships. For example, T-AO 194 delivery was delayed due to late receipt of Penn Ship material; T-AO 196 failed to adequately demonstrate part of the Acceptance Trails, which necessitated retesting.

c. Current Change Explanations --

(Ch-1) LAST T-AO DELIVERY: The delay from NOV 94 to APR 96 is due to the double-hulling of the last three FY89 T-AOs (T-AOs 201, 204, and 203).

9d. Schedule (Cont'd):

d. References --

Production Estimate:
NDCP #S0859 approved 7 DEC 81.

Approved Program:
NAE Approved Acquisition Program Baseline dated 04 January 1993.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length Overall (ft)	677'5"	677'5"	/ 677'5"	677'5"	677'5"
Beam, maximum (ft)	97'5"	97'5"	/ 97'5"	97'5"	97'5"
Draft, navigational (ft)	36'0"	36'0"	/ 36'0"	36'0"	36'0"
Displacement (long tons)	40000	40000	/ 40000	40000	40000
Propulsion:					
No. of Diesel Engines	2	2	/ 2	2	2
No. of Shafts (Controllable Reversible Pitch Propellers)	2	2	/ 2	2	2
Shaft Horse Power (each)	16000	16000	/ 16000	16000	16000
Accommodations	137	137	/ 137	137	137
Maximum Speed (kts)	20	20	/ 20	20	20
Endurance (NM)	6000	6000	/ 6000	6000	6000
Cargo (bbls)	180000	180000	/ 180000	180000	180000
Armament	0	0	/ 0	0	0

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
NDCP #S0859 approved 7 DEC 81.

Approved Program:
NAE Approved Acquisition Program Baseline dated 04 January 1993.

T-AO 187 OILER, December 31, 1992

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	15.8	15.3	15.4
Procurement	2591.9	2637.8	2712.7
Sailaway	(2518.4)		(2712.7)
Peculiar Support	(73.5)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	2607.7	2653.1	2728.1
Escalation	583.0	283.2	272.4
Development (RDT&E)	(0.4)	(-0.6)	(-0.7)
Procurement	(582.6)	(283.8)	(273.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3190.7	2936.3	3000.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	17	18	18
Total	17	18	18

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
NDCP #S0859 approved 7 DEC 81.

Approved Program:
NAE Approved Acquisition Program Baseline dated 04 January 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3000.5	2936.3	3000.5
(2) Quantity	18	18	18
(3) Unit Cost	166.69	163.13	166.69
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	12.4	12.4	9.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	12.4	12.4	9.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	16.2	3174.5	0.0	3190.7
Previous Changes:				
Economic	-	-188.8	-	-188.8
Quantity	-	+177.6	-	+177.6
Schedule	-	-65.9	-	-65.9
Engineering	-	-	-	-
Estimating	-1.5	-179.5	-	-181.0
Other	-	-	-	-
Support	-	+3.7	-	+3.7
Subtotal	-1.5	-252.9	-	-254.4
Current Changes:				
Economic	-0.1	-2.6	-	-2.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	+208.5	-	+208.6
Other	-	-	-	-
Support	-	-141.7	-	-141.7
Subtotal	-	+64.2	-	+64.2
Total Changes	-1.5	-188.7	-	-190.2
Current Estimate	14.7	2985.8	-	3000.5

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	15.8	2591.9	0.0	2607.7
Previous Changes:				
Quantity	-	+166.4	-	+166.4
Schedule	-	-13.9	-	-13.9
Engineering	+0.7	-	-	+0.7
Estimating	-1.2	-137.2	-	-138.4
Other	-	-	-	-
Support	-	+30.6	-	+30.6
Subtotal	-0.5	+45.9	-	+45.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	+179.0	-	+179.1
Other	-	-	-	-
Support	-	-104.1	-	-104.1
Subtotal	+0.1	+74.9	-	+75.0
Total Changes	-0.4	+120.8	-	+120.4
Current Estimate	15.4	2712.7	-	2728.1

b. Previous Change Explanations --

RDT&E

Engineering: Higher RDT&E effort costs.

Estimating: Twin Skeg alternative cancelled; contract design requirements reduced accordingly.

Procurement

Quantity: One additional ship added to the program in FY 91.

Schedule: Addition of three ships in FY 89 (for a total of 5) and deletion of FY 90 and FY 94 ships to reflect this consolidation.

Estimating: Repricing based on prior years shipbuilding experience; Overrun to FY 85-87 ships.

Support: Change in Outfitting (OF) material and Post

13b. **Cost Variance Analysis (Cont'd)**:
Delivery (PD) allowances. Change in prior year asset recoupment.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+0.1	--
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-18.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+16.0
Adjustment for Current & Prior Inflation. (Estimating)	+12.6	+14.5
Revised program estimates (Estimating)	+62.3	+52.3
Correction of Estimating and Support variances to reflect Outfitting and Post Delivery (OF/PD) as sailaway:		
Reclassification of Support variance to Estimating variance. (Estimating)	+104.1	+141.7
Reclassification of Support variance to Estimating variance. (Support)	-104.1	-141.7
Procurement Subtotal	+74.9	+64.2

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
187.69	-10.64	-0.56	-3.66	--	1.53	--	-7.67	-21.00	166.69

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

T-AO 198-204:	Initial Contract Price Target	Ceiling	Qty
AVONDALE INDUSTRIES, INC., NEW ORLEANS, LA N00024-88-C-2050, FFP Award: June 20, 1988 Definitized: June 20, 1988	$97.6	N/A	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$798.1	N/A	7	$798.1	$798.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-28.9	$4.6
Cumulative Variances To Date (11/30/92)	$-55.4	$-21.6
Net Change	$-26.5	$-26.2

Explanation of Change:

COST and SCHEDULE variances are due to inadequate production manhour budgets, labor and overhead rates higher than budgeted rates, and inefficiencies in design and production.

(b)(4) [redacted]

T-AO 191/192:	Initial Contract Price Target	Ceiling	Qty
TAMPA SHIPYARDS, INC., TAMPA, FL N00024-90-C-2300, FPI Award: November 16, 1989 Definitized: June 29, 1990	$47.1	$49.0	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$96.4	$104.6	2	$96.4	$96.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change:

TSI has not yet submitted an acceptable CPR. Lack of accurate cost and schedule information precludes variance calculations.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 80.0% (12 yrs/15 yrs)

(2) Percent Program Cost Appropriated: 99.3% ($2978.8 / $3000.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96)	Total
RDT&E	14.7	-	-	-	14.7
Procurement	2964.1	9.4	5.7	6.6	2985.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2978.8	9.4	5.7	6.6	3000.5

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1982				12.8	12.0	12.0	12.0	7.6
1983				1.0	1.0	1.0	1.0	4.9
1984				0.3	0.3	0.3	0.3	3.8
1985				0.3	0.3	0.3	0.3	3.4
1986				0.1	0.1	0.1	0.1	2.8
1987				0.9	1.0	1.0	1.0	2.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
Subtot				15.4	14.7	14.7	14.7	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1982	1		174.7	171.2	173.4	173.2	171.4	7.5
1983	1		137.7	134.5	138.3	138.0	136.6	3.8
1984	2		266.9	260.7	273.0	272.0	269.1	3.6
1985	3		635.1	621.8	663.0	611.1	528.4	2.1
1986	2		252.7	252.7	275.1	262.3	255.9	1.1
1987	2		259.4	254.7	282.6	263.5	252.3	1.5
1988	2		248.6	239.8	272.3	248.0	236.3	2.3
1989	5		737.6	699.8	812.0	637.0	412.7	2.8
1990				15.7	18.6	9.6	6.3	1.3
1991				18.1	21.9	19.0	5.5	1.3
1992				17.4	21.5	5.0	4.2	1.7
1993				9.8	12.4	1.3		2.4
1994				7.3	9.4			2.4
1995				4.3	5.7			2.3
1996				4.9	6.6			2.3

16c. **Program Funding Summary (Cont'd)**:

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1997								
Subtot	18		2712.7	2712.7	2985.8	2640.0	2278.7	
Grand Total	18		2712.7	2728.1	3000.5	2654.7	2293.4	

17. **Production Rate Data**:

a. Production Baseline Rate

This section is not required for this program. The production rate is less than 6 items per year.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		9.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		5.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		6.6		N/A	N/A

17c. **Production Rate Data (Cont'd)**:

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	12/12

d. Approved Design-to-Cost Objective -- N/A.

18. **Operating and Support Costs**:

a. Assumptions and Ground Rules --

The T-AO 187 Class Fleet Oiler is designed to operate independently or as a unit of an underway replenishment group, furnishing petroleum/oil/lubricant products to operating forces. The O&S costs associated with this ship class is based on a useful life of 25 years. Ship design parameters indicate that each ship will consume about 63,600 BBL of fuel each year.

Direct personnel costs involve the annual cost for civilian mariners plus the embarked Navy Military Detachment. Personnel retirement costs are not included in these costs. Direct operating costs include the cost of fuel, repair parts, supplies, training, expended stores, and purchased services. Direct maintenance is based on annual costs of $3.9M; indirect costs include overhead. The baseline used to derive the estimates are an average of the FY92 Actuals, five-year maintenance cost averages, and the FY93 approved expenses.

b. Costs -- (FY T-AO Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per T-AO 187 Class	Avg Annual Cost Per T-AO 143 Class
Direct Personnel	5.1	4.1
Direct Operations	4.9	4.3
Direct Maintenance	2.1	4.3
Indirect Costs	1.2	0.5
Total	13.3	13.2

c. Contractor Support Costs -- None.

AF-12 F-22

92-091

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: F-22

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 19 1993 10
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
   F-22

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
   F-22 SYSTEM PROGRAM OFFICE
   AERONAUTICAL SYSTEMS CENTER
   WRIGHT-PATTERSON AFB
   DAYTON, OH 45433-7003

   BRIG GEN ROBERT F. RAGGIO
   Assigned: July 1, 1992
   AV 785-4167 COMM (513) 255-4167

4. (U) Program Elements/Procurement Line Items:

   RDT&E:
   PE 0603109F (Shared) Project 622273
   PE 0603230F
   PE 0604227F (Shared) Project 663143
   PE 0604239F
   PE 0604250F (Shared) Project 643389, 643393, 643786

[redacted]

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93-331 -T

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 3010 ICN ATF000 (Air Force)
MILCON:
PE 0604239F

NOTE: PE 0604239F is the only RDT&E program element with funding after FY 91. The other PEs are shown for information as they are included in the total program funding.

5. (U) Related Programs: None.

6. (U) Mission and Description:
The F-22 Program will develop the next-generation air superiority fighter for introduction in the early 2000's to counter emerging proliferating worldwide threats. The F-22 is designed to penetrate enemy airspace and achieve a first-look, first-kill capability against multiple targets. F-22 Engineering and Manufacturing Development (EMD) effort is based on the Weapon System Specification formulated from data developed during the Demonstration/Validation (Dem/Val) phase. The EMD program consists of design, fabrication, and development testing of 9 EMD flight test vehicles (7 single and 2 dual seat); design, fabrication, development testing, and delivery of 27 EMD flight qualified engines; updating of the Dem/Val Avionics Flying Laboratory into a Flying Test Bed and using it to develop and integrate the EMD avionics suite; and design and development of F-22 Weapon System support and training systems. The F-22 program from the outset has placed balanced emphasis on performance, survivability, reliability/maintainability, and affordability. The F-22 is characterized by a low observable highly maneuverable airframe, new engine capable of supersonic cruise without using afterburner, and advanced integrated avionics.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The Advanced Tactical Fighter (ATF) Dem/Val phase involved two competing aircraft teams (Lockheed teamed with General Dynamics and Boeing, and Northrop teamed with McDonnell Douglas) and two competing engine contractors (Pratt and Whitney (P&W) and General Electric(GE)). Each airframe contractor flew two prototype air vehicles (PAVs)--one with two GE engines and one with two P&W engines. On 2 January 1991, both air vehicle contractor teams and both engine contractors submitted proposals for the ATF EMD program. On 23 April 1991, the Secretary of the Air Force (SAF) announced the winners of the ATF EMD Source Selection: Lockheed (teamed with General Dynamics and Boeing) for the air vehicle and integration of the overall weapon system and Pratt & Whitney for the engine. In conjunction with the selection, the ATF was redesignated the F-22.

7a. (U) Program Highlights (Cont'd):

Milestone II approval was confirmed by an Acquisition Decision Memorandum (ADM), 1 August 1991, authorizing the F-22 EMD and long lead for four Pre-Production Verification (PPV) air vehicles. On 2 August 1991, EMD contracts were awarded to Lockheed and Pratt & Whitney.

b. (U) Significant Developments Since Last Report --
The F-22 program experienced a funding shortfall of approximately $700M in FY 93. As a result, the Engineering and Manufacturing Development (EMD) contracts were no longer executable. Consequently, System Program Office (SPO) senior management ordered a program rephasing. Eleven different options were developed and presented through the Program Executive Officer (PEO), Air Combat Command (ACC) Commander, and Chief of Staff of the Air Force (CSAF) to the Secretary of the Air Force (SAF). With the Secretary's selection of Option 5B, the program was rephased to meet existing funding profiles by reducing the number of EMD aircraft from 11 to 9, reducing the number of engines from 33 to 27, and stretching the EMD program approximately 12 months. Pre-Production Verification (PPV) and Milestone III (MS III) were also slipped causing the entire production program to slip one FY.

Significant progress was made on the F119 engine development. The engine Critical Design Review/Initial Production Readiness Review was completed 14-16 July 1992. The core engine, FX620, was assembled, instrumented, and began testing in September 1992. It accumulated 83 hours in test at Arnold Engineering and Development Center (AEDC). The first EMD engine, FX621, entered testing at West Palm Beach on 17 December 1992.

The program instituted the Cost/Weight Improvement Program (C/WIP) to increase management attention on increasing contractor costs, including overhead, and aircraft weight. To implement C/WIP, a team of approximately 60 contractor and System Program Office (SPO) personnel was assembled and given the charter to reduce weight and cost. By the end of the year, the C/WIP team had made significant progress towards meeting programmed design goals.

Lockheed Aeronautical Systems Group, the parent company for Lockheed Aeronautical Systems Company (LASC), acquired General Dynamics' Fort Worth Division, which will now be known as Lockheed Fort Worth Company (LFWC). This acquisition should result in no immediate impact on F-22 management schedule, or cost. However, it is probable that the F-22 program will see benefits from consolidating activities between LASC and LFWC.

The F-22 as currently planned will satisfy its mission requirements.

7b. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --
Engine testing on the FX620 core engine successfully completed in Feb 93. Test results show that the core performed very close to predictions. Meanwhile, the FX621 first EMD engine testing revealed lower than expected turbine performance and somewhat higher than anticipated turbine blade stresses. Both of these anomalies are currently being investigated to determine causes, concentrating on bleed/cooling air flow and turbine blade configuration changes from the YF119 prototype engines.

The latest in a series of meetings to cover all the accomplishments necessary to complete the Air Vehicle Preliminary Design Review (PDR) was held at Lockheed Aeronautical Systems Company, Marietta GA from 12-16 Apr 93. Out of over 3750 items reviewed, this meeting illuminated a few areas (less than 2%) where additional effort is required in order to meet all criteria necessary to complete the Air Vehicle PDR. The most significant areas were: Environmental Control System/Thermal Management System (ECS/TMS) predicted performance under hot day (120 degree Fahrenheit) conditions on the ground and in low altitude subsonic flight results in limited operating times; performance of InfraRed (IR) countermeasure flares is less than anticipated requiring larger size flares and, consequently, more space inside the aircraft; and, in airframe design, the wing internal structure needs additional beef up based on recent 23MM and 30MM High Explosive Incendiary (HEI) live fire testing, better grounding/ lightning protection is needed in the middle fuselage, and greater stiffness is needed in the aft fuselage/actuator/horizontal tail for high speed low altitude flutter margin. Each of these areas carries with it a potential impact on aircraft weight empty, but in no case is the Acquisition Program Baseline (APB) weight empty threshold approached. Design solutions to the above noted additional effort areas could increase weight empty from 400 to 1025 pounds. On 30 Apr 93 an Air Vehicle PDR review was held to close out the preliminary design for these open areas. This review successfully closed out the PDR while showing the selected designs in the open areas would result in an aircraft weight empty increase of approximately 430 to 435 pounds. While this weight erodes remaining margins to certain APB performance levels, none of those thresholds are likely to be exceeded. A three month concentrated design refinement effort is scheduled to begin early in May at Lockheed to further optimize system design and reduce potential impact of selected design solutions on the capability of the F-22 Weapon System.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated May 14, 1993) breaches or Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	OCT 86	OCT 86	OCT 86
Dem/Val Contract Award (Airframe only)	OCT 86	OCT 86	OCT 86
Early Operational Assessment			
Start	OCT 86	OCT 86	OCT 86
Complete	MAR 91	MAR 91	MAR 91
System Requirements Review	MAY 87	MAY 87	MAY 87
System Design Review	NOV 89	NOV 89	NOV 89
Prototype First Flight	JUN 90	JUN 90	AUG 90
Milestone II (DAB)	JUN 91	JUN 91	JUN 91
EMD Contract Award	AUG 91	AUG 91	AUG 91
Preliminary Design Review Complete	OCT 92	APR 93	APR 93(Ch-1)
Critical Design Review Complete	OCT 93	AUG 94	AUG 94(Ch-1)
Engine Initial Flight Release	OCT 94	APR 95	APR 95(Ch-1)
PPV Long Lead	JAN 95	DEC 95	DEC 95(Ch-1)
First Flight	SEP 95	JUN 96	JUN 96(Ch-1)
DT&E			
Start	SEP 95	JUN 96	JUN 96(Ch-1)
Complete	DEC 99	JUL 00	JUL 00(Ch-1)
PPV Contract Award	JAN 96	JAN 97	JAN 97(Ch-1)
Low Rate Initial Production (LRIP) Decision	OCT 96	OCT 97	OCT 97(Ch-1)
Low Rate Production Contract Award	JAN 97	JAN 98	JAN 98(Ch-1)
LRIP First Delivery	JAN 99	JAN 00	JAN 00(Ch-1)
Dedicated IOT&E			
Start	JUN 99	JUL 00	JUL 00(Ch-1)
Complete	SEP 99	MAR 01	MAR 01(Ch-1)
Milestone III	DEC 99	JUL 01	JUL 01(Ch-1)
High Rate Production Contract Award	JAN 01	AUG 01	AUG 01(Ch-1)
Initial Operational Capability	TBD	SEP 03	SEP 03(Ch-2)
Organic Organizational Maintenance Capability	TBD	SEP 03	SEP 03(Ch-2)
Required Assets Availability (RAA)	OCT 02	SEP 03	SEP 03(Ch-2)
Organic Depot Activation	TBD	OCT 05	OCT 05(Ch-3)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) These dates were changed to reflect the Program Manager's current estimate as a result of the program rephasing.

(Ch-2) Air Combat Command (ACC) determined an Initial Operational Capability (IOC) date (previously TBD), an Organic Organizational Maintenance Capability date (previously TBD), and a Required Assets

9c. (U) Schedule (Cont'd):
Availability (RAA) date of October 2002. The current estimate of September 2003 reflects the impact of the EMD program rephase.

(Ch-3) The current estimate of October 2005 replaces the previous TBD and reflects the coordinated position of both the F-22 SPO and the depot organization (SM-ALC).

d. (U) References --

(U) Development Estimate:
Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB), 3 February 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 14 May 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Mean Time Between Maintenance (MTBM) (hrs)	3.0	3.0	/ 3.0	N/A	3.0	
USD(A) Risk Assessment Items:						
Mission Effectiveness (Compared to current operational F-15 at time of IOT&E)	2	2	/ 2	N/A	2	
Direct on-and-off Maintenance Personnel (spaces per ac)	8.7	8.7	/ 8.7	N/A	8.6	(CH-1)

(b)(1)

[redacted]

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Last year's current estimates were set equal to the threshold values as the program had just entered the development phase. The Current Estimates noted here reflect estimates based on development data not previously available. For instance, current estimates for

10c. (U) Performance Characteristics (Cont'd):
Maneuverability and Weight Empty are based on Weight Status Report (WSR) #60, 30 Apr 93. The Current Estimate for Combat Radius is based on both the current estimate for Weight Empty and use of JP-8 fuel.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 3 February 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 14 May 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	16560.0	16560.0	16481.9
Procurement	43510.0	43510.0	44106.1
Airframe	(21485.7)		(21569.4)
Engines	(5993.7)		(6008.1)
Avionics	(9250.6)		(9278.0)
Total Flyaway	(36730.0)		(36855.5)
Other Weapon Systems	(1032.1)		(1032.1)
Peculiar Support	(1896.1)		(2358.7)
Initial Spares	(3851.8)		(3859.8)
Construction (MILCON)	200.0	200.0	120.4
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	60270.0	60270.0	60708.4
Escalation	38839.0	38839.0	25900.9
Development (RDT&E)	(2969.0)	(2969.0)	(2218.5)
Procurement	(35762.0)	(35762.0)	(23630.6)
Construction (MILCON)	(108.0)	(108.0)	(51.8)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	99109.0	99109.0	86609.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	648	648	648
Total	648	648	648

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 9 from the Current Estimate that are not considered fully configured.

NOTE: Only FY96 long lead items for four Pre-Production Verification (PPV) aircraft are approved at this time in the Acquisition Decision

11b. (U) Total Program Cost and Quantity (Cont'd):
Memorandum (ADM). A Defense Acquisition Board (DAB) review will be held prior to long lead commitment for the first Low Rate Initial Production (LRIP) award and exercise of the option for the four PPV aircraft (FY97).

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved APB dated 3 February 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 14 May 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	86609.3	96395.4	86609.3
(2) Quantity	648	648	648
(3) Unit Cost	133.66	148.76	133.66
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	19529.0	79272.0	308.0	99109.0
Previous Changes:				
Economic	-1.5	-3172.4	-11.3	-3185.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+12.5	-	-	+12.5
Other	-	-	-	-
Support	+2.4	+456.7	-	+459.1
Subtotal	+13.4	-2715.7	-11.3	-2713.6
Current Changes:				
Economic	-494.2	-10443.0	-25.3	-10962.5
Quantity	-483.1	-	-	-483.1
Schedule	+32.4	+1623.4	-	+1655.8
Engineering	-	-	-	-
Estimating	+102.9	-	-99.2	+3.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-842.0	-8819.6	-124.5	-9786.1
Total Changes	-828.6	-11535.3	-135.8	-12499.7
Current Estimate	18700.4	67736.7	172.2	86609.3

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	16560.0	43510.0	200.0	60270.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+228.6	-	-	+228.6
Other	-	-	-	-
Support	+45.3	+470.6	-	+515.9
Subtotal	+273.9	+470.6	-	+744.5
Current Changes:				
Quantity	-424.1	-	-	-424.1
Schedule	+17.0	+125.5	-	+142.5
Engineering	-	-	-	-
Estimating	+55.1	-	-79.6	-24.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-352.0	+125.5	-79.6	-306.1
Total Changes	-78.1	+596.1	-79.6	+438.4
Current Estimate	16481.9	44106.1	120.4	60708.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Change due to contractor specific configuration, weight, and composite complexities following the EMD downselect to a single air vehicle/integration contractor and a single engine contractor. Also, includes system test refinement and an adjustment for current and prior year escalation change.

Support: Change due to increased factor base.

Procurement

Economic: Revised economic escalation indices.

Support: Increase for inclusion of Interim Contractor

13b. (U) Cost Variance Analysis (Cont'd):
Support (ICS) and Common Support Equipment (CSE).

MILCON
Economic: Revised economic escalation indices.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-494.2
Deleted 2 EMD aircraft and 6 EMD engines due to program rephase (Quantity)	-424.1	-483.1
Estimate refinement based on development data not previously available and Small Business Innovative Research (SBIR) exclusion (Estimating)	+55.1	+90.8
Adjustment for current and prior year escalation (Estimating)	N/A	+12.1
EMD program rephase stretches development approximately one year (Schedule)	+17.0	+32.4
RDT&E Subtotal	-352.0	-842.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-10443.0
Entire production phase slipped one FY. (Schedule)	+125.5	+1623.4
Procurement Subtotal	+125.5	-8819.6
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	-25.3
Revised depot requirements based on facility survey with emphasis on maximum facility utilization. (Estimating)	-79.6	-99.2
MILCON Subtotal	-79.6	-124.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
152.95	-21.83	-0.75	2.56	--	0.03	--	0.71	-19.28	133.66

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) F-22 EMD (LASC):

LOCKHEED CORPORATION, Marietta, GA
F33657-91-C-0006, CPAF
Award: August 2, 1991
Definitized: August 2, 1991

Initial Contract Price		
Target	Ceiling	Qty
$9550.1	N/A	11

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$10757.4	N/A	9	$10757.4	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$-24.2	$-48.1
Net Change	$-24.2	$-48.1

Explanation of Change:

The cost variance net change of -$24.2M (-1.9%) and the schedule variance net change of -$48.1M (-3.6%) are cumulative changes since contract award 19 months ago. The significant drivers for the cost variance are Avionics (-$10.7M) and Indirect (-$10.6M) with smaller offsetting variances across the program. Indirect rate increases were caused by business base reductions and increased fringe costs. Avionics (60%) is the major contributor to the schedule variance. The Avionics schedule variance is expected to improve as the EMD program rephase is finalized and the subcontractors complete rebaselining.

The difference between the Initial Contract Target Price and both the Current Contract Price and the Estimated Price at Completion is the inclusion of authorized/unpriced work and award fee paid to date. The authorized/unpriced work is primarily the Lockheed Not-To-Exceed (NTE) amount to rephase the F-22 EMD program in accordance with Air Force direction. As part of the rephase, Lockheed was directed to

15. (U) Contract Information (Cont'd):
delete 2 aircraft from the EMD program accounting for the quantity difference. To avoid compromising upcoming negotiations on the Undefinitized Contractual Action (UCA) for the program rephase, the Program Manager's Estimated Price at Completion would have to exclude all rephase impacts. Under those constraints, any estimate provided would misrepresent the actual program and, therefore, has been omitted.

(U) EMD ENGINE (P&W):	Initial Contract Price Target	Ceiling	Qty
PRATT&WHITNEY ACFT GRP, WEST PALM BEACH, FL			
F33657-91-C-0007, CPAF	$1375.1	N/A	33
Award: August 2, 1991			
Definitized: August 2, 1991			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1519.8	N/A	27	$1519.8	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$-21.3	$-9.2
Net Change	$-21.3	$-9.2

Explanation of Change:

The cumulative negative cost variance (-5.0%) through February 93 has accumulated as a result of component redesigns, inefficiencies in the early manufacture of development hardware, and increased tooling and drafting costs. Components currently experiencing the largest increases are the Fan, Low Pressure Turbine, and Exhaust Nozzle.

The cumulative negative schedule variance (-2.1%) is attributable to subcontractors who are in the process of replanning their portion of the rephased program, as well as some recent testing delays.

The difference between the Initial Contract Target Price and both the Current Contract Price and the Estimated Price at Completion is the inclusion of authorized/unpriced work and award fee paid to date. The authorized/unpriced work is primarily the P&W Not-To-Exceed (NTE) amount to rephase the F119 EMD program in accordance with Air Force direction. As part of the rephase, P&W was directed to delete 6 engines from the EMD program accounting for the quantity difference. To avoid compromising upcoming negotiations on the Undefinitized Contractual Action (UCA) for the program rephase, the Program Manager's Estimated Price at Completion would have to exclude all rephase impacts. Under those constraints, any estimate provided would misrepresent the actual program and, therefore, has been

15. (U) Contract Information (Cont'd):
omitted.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 30.6% (11 yrs/36 yrs)

(2) Percent Program Cost Appropriated: 8.7% ($7508.2 / $86609.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2018)	Total
RDT&E	7508.2	2251.0	2373.1	6568.1	18700.4
Procurement	-	-	-	67736.7	67736.7
MILCON	-	-	4.7	167.5	172.2
O&M	-	-	-	-	-
Total	7508.2	2251.0	2377.8	74472.3	86609.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1983				24.8	20.0	20.0	20.0	4.9
1984				40.7	34.1	34.1	34.1	3.8
1985				104.8	90.8	90.8	90.8	3.4
1986				171.5	152.1	152.1	152.1	2.8
1987				320.6	297.2	297.2	297.2	2.7

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1988				527.1	504.4	504.4	504.4	3.1
1989				809.8	800.1	800.1	800.1	4.2
1990				1093.6	1124.2	1124.2	1124.2	4.0
1991				895.1	953.3	953.3	951.5	4.3
1992				1472.8	1606.8	1605.1	1395.1	2.8
1993				1723.5	1925.2	1159.6	4.8	2.4
1994				1969.4	2251.0			2.4
1995				2030.0	2373.1			2.3
1996				1515.0	1811.9			2.3
1997				1259.2	1538.8			2.2
1998				1058.4	1321.9			2.2
1999				737.1	940.5			2.2
2000				556.0	725.0			2.2
2001				172.5	230.0			2.2
Subtot				16481.9	18700.4	6740.9	5374.3	

NOTE: Obligated and expended amounts reflect program office records as of 28 February 1993.

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3010 Aircraft Procurement, Air Force								
1996				69.7	86.2			2.3
1997	4	241.0	401.6	735.5	930.2			2.2
1998	4	72.0	416.2	881.2	1138.7			2.2
1999	12		1117.4	1561.1	2062.1			2.2
2000	24	12.8	1957.6	2388.4	3225.7			2.2
2001	36	45.5	2526.1	3049.7	4210.0			2.2
2002	48		3073.0	3516.3	4959.8			2.2
2003	48		2874.2	3377.3	4868.3			2.2
2004	48		2740.4	3234.9	4767.0			2.2
2005	48		2640.8	3124.7	4704.4			2.2
2006	48		2562.1	3015.4	4642.8			2.2
2007	48		2497.9	2935.3	4616.2			2.2
2008	48		2443.3	2868.2	4611.4			2.2
2009	48		2396.5	2815.2	4624.7			2.2
2010	48		2355.5	2748.8	4615.0			2.2
2011	48		2319.2	2708.2	4647.0			2.2
2012	48		2286.0	2634.4	4620.7			2.2
2013	40		1876.4	2046.4	3667.6			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
2014				170.6	312.0			2.2
2015				121.3	226.8			2.2
2016				59.8	114.2			2.2
2017				30.1	58.7			2.2
2018				13.6	27.2			2.2
Subtot	648	371.3	36484.2	44106.1	67736.7			
Appropriation: 3300 Military Construction, Air Force								
1995				3.9	4.7			2.3
1996				5.8	7.1			2.3
1997				3.1	3.8			2.2
1998								2.2
1999								2.2
2000				36.7	48.8			2.2
2001								2.2
2002				16.8	23.3			2.2
2003				6.9	9.8			2.2
2004				3.6	5.2			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3300 Military Construction, Air Force (Cont'd)								
2005				6.3	9.4			2.2
2006				2.8	4.2			2.2
2007				8.3	12.8			2.2
2008				8.3	13.2			2.2
2009				3.5	5.7			2.2
2010				3.6	5.9			2.2
2011				7.1	12.0			2.2
2012				3.7	6.3			2.2
Subtot				120.4	172.2			
Grand Total	648	371.3	36484.2	60708.4	86609.3	6740.9	5374.3	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is Pre-Milestone III and no full rate production baseline has been determined.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		67736.7		N/A	N/A

NOTE: This information is not required for Pre-Milestone III programs.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Operating and Support (O&S) cost estimate is based on the analysis completed in May 1991 during the F-22 EMD Source Selection.

The F-22 concept of operation is a 24 aircraft fighter squadron with a utilization rate of 360 flight hours/year (FH/Yr) per aircraft. The F15C is the antecedent to the F-22; both are two engine air-to-air fighters with similar operational concepts. The F-15C comparison estimate was based on standard F-15C cost and planning factors from AFR 173-13 (US Air Force Cost and Planning Factors). This regulation is updated on the Air Force Cost Analysis Agency Bulletin Board Service and was current as of 22 Feb 91.

The wartime scenario was used to estimate the maintenance manpower. A peacetime operating scenario was assumed for estimating all other O&S cost elements. No unique cost differences were attributed between

18a. (U) Operating and Support Costs (Cont'd):
F-22 combat and training-coded squadrons. One of the major O&S savings for the F-22 is that a 2-level avionics maintenance concept is planned which will delete all base avionics intermediate shops. All other estimate assumptions and ground rules for the F-15C are the same as for the F-22.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F-22 Squadron	Avg Annual Cost Per F-15C Squadron
Unit Mission Personnel	15.7	22.5
Unit Level Consumption	13.0	13.2
Depot Maintenance	8.6	13.8
Sustaining Investment	9.2	19.0
Installation Support Per	2.4	3.0
Indirect Personnel Suppo	4.4	6.5
Depot Support	1.7	2.1
Acquisition and Training	5.7	6.2
Total	60.7	86.3

c. (U) Contractor Support Costs -- None.

The cost table above provides a summary level comparison of annual squadron operating costs for the F-22 and the F-15C. F-22 O&S costs are estimates of an average composite CONUS/Overseas squadron (60% CONUS, 40% Overseas). F-15C values are provided normalized with the F-22 at 360 Flight Hours/Aircraft/Year.

Contractor support costs will begin in FY99. However, a Balance to Complete cannot be adequately estimated as the system support concept is not yet fully definitized.

AF-28 TITAN IV

92 APR

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: TITAN IV (ELV)

AS OF DATE: December 31, 1992

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1. **Designation and Nomenclature (Preferred Name):**
Titan IV, formerly CELV, now Expendable Launch Vehicle (ELV)

2. **DoD Component:** USAF

3. **Responsible Office and Telephone Number:**
Titan IV (ELV)
180 Skynet St
Suite 1508
Los Angeles AFB, CA 90009-2960

Col Charles F. Stirling
Assigned: October 3, 1989
AV 833-0210 COMM (310) 363-0210

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0305171F (Shared), 0304111F (Shared), 0305144F, 0305119F (Shared)
PROCUREMENT:
APPN 3020 ICN MSBSTR (Air Force) (Shared)
APPN 3020 ICN MS0299 (Air Force)
MILCON:
PE 0305119F

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5. **Related Programs:**
Defense Support Program (DSP); Milsatcom; Defense Satellite Communication System (DSCS); Space Shuttle Operations-Inertial Upper Stage (IUS); Classified Payloads; Follow on Early Warning System (FEWS)

SAF/PAS

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6. Mission and Description:
The Titan IV program will not replace any defense programs. It will assure continued access to space for the nation's highest priority space systems. The Titan IV system evolved from the basic family of Titan systems, namely the Titan IIIB, C, D, E, and 34D, which have contributed to national space objectives for more than 25 years. The Titan IV consists of a liquid propellant core of two stages with a pair of large solid rocket motors (SRM) attached to the core to provide the initial stage of boost from liftoff. The development of a new solid rocket motor upgrade (SRMU) will provide increased reliability, producibility, and performance. While a variety of upper stages may be compatible with the booster, the two upper stages baselined for use on the Titan IV are the Inertial Upper Stage (IUS) and the Titan/Centaur. When configured with the Centaur, a single stage liquid propellant restartable upper stage, the Titan IV/Centaur is capable of placing a 10,000-pound payload into Geosynchronous Earth Orbit (GEO). The Titan IV/IUS configuration is capable of placing a 5,200-pound payload into GEO. When configured without an upper stage (NUS), the Titan IV/NUS can place a 31,000-pound payload into a 100-nmi circular, polar orbit. The Titan IV was designated a DAB program in July 1991.

7. Program Highlights:
a. Significant Historical Developments --
Development of the Titan IV program is in direct response to a National Security Decision Directive which directed the DOD to provide assured access to space for critical DOD satellites. The initial contract for development, qualification, and production of 10 Titan IVs with Centaur upper stages was awarded in February 1985. This contract included the activation and operation of a single Titan IV/Centaur launch facility at Cape Canaveral AFS, FL (CCAFS). The program has since completed Preliminary Design Reviews for all major subsystems including the new SRMU. The first Titan IV was launched in June 1989 and successfully placed a payload into space. The Titan IV system has not undergone any IOT&E.

As a result of the 28 January 1986 Space Shuttle Challenger accident, the DOD embarked on a recovery plan which included the acquisition of 13 additional Titan IV boosters, activation and operation of an existing Titan launch pad at Vandenberg AFB, CA (VAFB), the design and development of a new Titan IV/Centaur launch pad at VAFB and STS/Titan IV dual compatibility for some AF satellites launched from the east coast. The resulting 23-vehicle Titan IV program was placed on contract in December 1987, and was structured to account for the impacts of the April 1986 Titan 34D accident and the June 1986 NASA/Centaur cancellation.

The DOD later embarked on an increased capacity plan which included the modification of an additional launch pad at CCAFS, the

7a. Program Highlights (Cont'd):

acquisition of 18 additional Titan IV boosters and associated facility and plant enhancements. The current 41-vehicle program was definitized in December 1989.

During 1990, launches were conducted on 8 June and 12 November which successfully placed satellites into orbit. Initial Launch Capability (ILC) for the first VAFB launch facility was achieved on 25 October 1990. The first Centaur upper stage was shipped to the Cape Canaveral launch facility for launch processing on 17 December 1990.

In March 1991, a fourth successful launch was achieved, the first from VAFB. We also received program management direction that deleted the requirement to activate Space Launch Complex 6 as a Titan IV launch pad. On April 1, 1991, an explosion occurred during the static firing test of the SRMU Preliminary Qualification Motor No. 1 (PQM-1). This test accident caused significant damage to the test facility and required a modification of the SRMU propellant grain configuration. PQM-1' was successfully retested on 12 Jun 92 and will be followed by four qualification motor firings through Summer 1993. SRMU ILC has now been delayed from April 1992 to February 93. Launch Complex 40 (LC-40) will provide a second Titan IV launch pad at Cape Canaveral. The LC-40 change order was definitized in November 1991. On September 11, 1991, Martin Marietta was authorized to start production slowdown in order to match reduced launch rate requirements. The Solid Motor Assembly and Readiness Facility (SMARF) at Cape Canaveral was turned over to the Air Force on October 31, 1991 under budget and ahead of schedule. On November 8, 1991, a fifth Titan IV was successfully launched, the second from VAFB.

On 7 Jul 92, LC-40 interim launch capability was declared for Commercial Titan to support NASA for the Commercial Titan/Mars Observer mission, which was successfully launched 25 Sep 92. The ILC for the Centaur upper stage has been delayed due to an acceptance test failure of the Digital Computer Unit (DCU). The Unified Payload Integration (UPI) contract was awarded on 1 Jul 92 and will provide payload integration capability through FY97.

b. Significant Developments Since Last Report --
Titan IV-3 was successfully launched from Space Launch Complex 4 East (SLC-4E) at Vandenberg AFB, CA on 28 Nov 92. The third SRMU test firing (QM-1) was successfully conducted on 15 Oct 92. The Titan IV system continues to satisfy mission requirements.

c. Changes Since As Of Date --
The fourth SRMU qualification motor (QM-2) was successfully fired on 21 Feb 93. LC-40 IUS/NUS/ facility ILC was successfully achieved 28 Feb 93. A second program restructure will be implemented in June 93

7c. Program Highlights (Cont'd):

that will reduce the estimated production requirement. This SAR is based on three vehicles per year. This restructure results in further cost increases and scgedule changes that are reflected in this SAR.

8. Threshold Breaches:

There have been Performance, Schedule, and cost breaches to the Acquisition Program Baseline (APB) (dated 4 Jan 1991).
There is a Nunn-McCurdy unit cost breach. Details of the breach are provided in section 12.

9. Schedule:

a. Milestones --

	Development Estimate	Approved Program	Current Estimate
Initial Contract Award	FEB 85	FEB 85	FEB 85
Production Start	OCT 85	N/A	OCT 85
System Preliminary Design Review	APR 86	N/A	APR 86
Critical Design Review	NOV 86	NOV 86	OCT 86
Addition of 13 Vehicles	N/A	DEC 87	DEC 87
First Core Delivery to CCAFS	N/A	JAN 88	JAN 88
First Delivery to CCAFS	FEB 88	N/A	APR 88
Initial Launch Capability (ILC)			
Titan IV/IUS	OCT 88	FEB 89	FEB 89
Titan IV/NUS (WTR)	N/A	OCT 90	OCT 90
Titan IV/Centaur	N/A	JUN 91	FEB 93(Ch-1)
SLC-40	N/A	SEP 92	FEB 93(Ch-2)
SLC-7 (2nd West Coast Pad)	N/A	JUN 96	N/A
Centaur Structural Test	N/A	JUL 89	APR 91
SRMU Static Firing (PQM-1)	N/A	FEB 91	JUN 92
SRMU ILC	N/A	APR 92	JUL 94(Ch-3)

Note: SLC-40 is now known as LC-40, or Launch Complex 40.

b. Previous Change Explanations --

Due to favorable progress driven by the Preliminary Design Review, the Systems critical Design Review was held one month ahead of schedule. Progress made by the core contractor allowed delivery of the first core to CCAFS ahead of schedule. However, delays in deliveries of the payload fairing and solid rocket motors caused a delay in delivery of the final vehicle components fron February to April 1988. The delay in the Titan IV/NUS ILC at VAFB to December 90 was caused by the requirement for additional electrical mods to the Mobile Service Tower (MST) and the need to complete ground systems

9b. Schedule (Cont'd):
tests. The Titan IV/NUS WTR ILC was subsequently achieved three months early in October 1990. The delayed launch of the first Titan IV caused a slip in the TIV/Centaur ILC due to derived scheduling conflicts. The requirement for a second west coast launch pad (SLC-6) was deleted. Previous LC-40 ILC of fourth quarter FY92 was further refined to reflect a July 1992 ILC. The initial Centaur ILC structural test (JUL89) was completed in November 1989. Additional Centaur structural tests were completed in April 1991. The Centaur ILC slipped from June 1991 to August 1991 due to a launch delay of Titan IV-6 and failure of Atlas Centaur during May 1991 launch. The crane accident in September 1990 at Edwards AFB damaged the test stand, delaying in PQM-1 test until April 1991, and delayed the SRMU ILC to May 1992. The SRMU static firing (PQM-1') slipped from February 1991 to April 1992 because of the SRMU PQM-1 test explosion occurring on 1 April 1991. The PQM-1 test failure also delayed the SRMU ILC from May 1992 to August 1993. The Centaur ILC slipped from November 1991 to February 1992 due to additional inspections for contaminations resulting from the Commercial Atlas/Centaur (AC-70) failure. The SRMU static firing (PQM-1') slipped from April 1992 to May 1992 due to production schedule delays for the test "aft skirt" which is the attachment between the SRMU and the test stand. The Centaur ILC slipped from February 1992 to December 1992 due to an acceptance test failure of the Digital Computer Unit. LC-40 slipped from July 1992 to Novemeber 1992 to accommodate turnover to NASA for processing and launch of the Mars Observer mission on 25 September 1992. The SRMU static firing (PQM-1') slipped from May to June 1992 due to weather conditions (ie) winds) at the test site. PQM-1' was successfully tested on June 12, 1992.

c. Current Change Explanations --

(Ch-1) The Centaur ILC slipped from December 1992 to June 1993 due to assessment of the Atlas/Centaur-71 failure on 22 Aug 92 and user direction.
(Ch-2) LC-40 ILC was successfully achieved on 28 Feb 93. The milestone was slipped to accomodate turnover to NASA for processing and launch of the Mars Observer mission on 25 Sep 92.
(Ch-3) The SRMU ILC has been delayed from Aug 93 to July 94 due to the failure of the PQM-1 Motor during testing.

d. References --

Development Estimate:
FY87 President's Budget, February 1986.

Approved Program:
DAE Approved Acquisition Program Baseline dated 04 January 1991.

10. **Performance Characteristics:**

a. Performance --

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
System Reliability (%)	98	98	/ 96	100	96
Payload to Geosynchronous Orbit (k-lbs) (Titan IV/Centaur)					
SRM	10.0	10.0	/ 10.0	10.2	10.2
SRMU	N/A	11.5	/ 11.5	11.5	11.5
Payload to Geosynchronous Orbit (K-lbs) (Titan IV/IUS)					
SRM	N/A	5.0	/ 5.0	5.2	5.2
Payload to Low Earth Polar Orbit (k-lbs) (Titan IV/NUS)					
SRM	N/A	32.0	/ 32.0	31.4	31.4
SRMU	N/A	40.0	/ 40.0	38.8	38.8

Note: Centaur structural limit is 11.5 K-lbs. Payload to GEO for TIV Centaur/SRMU could be increased with structural modifications to the Centaur. No current direction or funding exists to modify the Centaur for increased capability. Demonstrated performance is based on test and analysis data.

b. Previous Change Explanations --

Performance Objectives/Thresholds for payload to low earth polar (Titan IV/NUS) are being updated in the APB (31.1 for SRM and 38.8 for SRMU) to reflect requirements in the 2 Apr 91 System Operational Requirements Document (SORD). Current estimate for the Titan IV/Centaur/SRM has increased from 10.0 to 10.2 due to updated engineering analysis. Current estimate for Titan/NUS/SRM was revised from 31.1 to 31.4 due to updated engineering analysis. Operating command SORD requires 31.1K.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
FY87 President's Budget, February 1986.

Approved Program:
DAE Approved Acquisition Program Baseline dated 04 January 1991.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	579.7	1813.5	2835.4
Procurement	1570.8	7523.3	16272.3
Flyaway	(1106.6)		(15100.7)
Other Wpn Sys	(464.2)		(1171.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	105.3	97.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 85 Base-Year $	2150.5	9442.1	19205.2
Escalation	378.7	2166.2	7737.0
Development (RDT&E)	(61.4)	(285.6)	(828.2)
Procurement	(317.3)	(1854.9)	(6879.9)
Construction (MILCON)	(0.0)	(25.7)	(28.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2529.2	11608.3	26941.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	10	55	65
Total	10	55	65

In addition to the 65 vehicles reported in the SAR, NASA plans to procure 7 vehicles bringing the program total to 72. All vehicles will be delivered by 2004 and launched by 2005.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
FY87 President's Budget, February 1986.

Approved Program:
DAE Approved Acquisition Program Baseline dated 04 January 1991.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	26941.9	22674.0	26941.9
(2) Quantity	65	65	65
(3) Unit Cost	414.49	348.83	414.49
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	939.0	939.0	1475.9
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	939.0	939.0	1475.9
(2) Quantity	6	6	6
(3) Unit Cost	156.50	156.50	245.98

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY85$)	19205.2	15821.8	19205.2
(2) Unit Cost	295.46	243.41	295.46
d. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY85$)	696.1	696.1	1069.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	696.1	696.1	1069.5
(2) Unit Cost	116.02	116.02	178.25

e. Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	65.660	18.82
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	0	N/A
(4) PAUC (BY85$)	52.053	21.38
(5) CPUC (BY85$)	0.000	N/A

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. Changes from the Previous SAR - (SEP 92 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	64.731	18.51
(2) CPUC (TY$)	19.800	14.48
(3) PAUC Quantity	N/A	N/A
(4) PAUC (BY85$)	51.300	21.01
(5) CPUC (BY85$)	13.000	12.62

g. Initial SAR (DEC 85)
(1) Program Acquisition Cost (TY$) -- 2529.2
(2) Program Acquisition Cost (BY$) -- 2150.5

h. Unit Cost Changes.

(1) PAUC --

The PAUC change from the previous SAR (18.5%) is due to additional funding received for prior year overruns and program slowdown costs. Reduced launch rate also drives the requirement for vehicle and subsystem storage. The storage requirement is new to the program. Production slowdown for the current contract and planned future buys also drives an increase to unit costs. Also included are the costs for stabilization of the Hercules' SRMU Development and Production Program.

(2) CPUC --

The CPUC increase is caused by additional funding added to accommodate SRMU Stabilization and program stretch-out costs.

i. Impact of Performance or Schedule Changes on Unit Cost.

While no single program milestone slip has affected the PAUC, the overall slowdown/stretchout of the program has increased the PAUC (see schedule change). The cost impact of the SRMU recovery plan, $350 million, is currently included in this PAUC. In addition, the planned procurement of 42+ booster hardware has slipped one year. Finally, due to the program stretchout, an additional year was added to the program life (FY2005).

j. Program Management and Control.

Col Charles F. Stirling

12. **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

k. Cost Control Actions.

No special actions will be implemented as a result of this breach. However, we continue to use the following methods to control costs:

1. An update to the Program Office Estimate (POE) was completed and briefed to the Air Force (AF) CAIG in August 1992. The Poe was adjusted for content changes included in the FY93 President's Budget. The December 91 SAR is the SAR financial baseline from which to manage the program.
2. The Titan Program Office has developed innovative oversight C/SCSC tools to continue maintaining cost control. These techniques are being utilized to effectively manage current contract and follow-on procurement efforts and strategies.
3. Emphasis on baseline management will continue.
4. The contractor has implemented a cost reduction plan consisting of 143 initiatives. Continual cost reduction errors will be implemented over the life of the program.
5. During the August 92 AF CAIG, the AF CAIG accepted the SAF/FMCC recommendation that found the POE point estimate (with the exception of risk and FPRA impacts) to be reasonable. The POE will undergo a formal OSD CAIG review as part of the DAB process.

(3) The contractor has implemented a cost reduction plan consisting of 143 initiatives. Continual cost reduction efforts will be implemented over the life of the program.

(4) Current estimating methodologies in the Single Best Estimate (SBE) and the overall program estimate are in the process of being validated by an Independent Cost Estimate (ICE). During the Sep 92 Air Force CAIG, the ICE Team found the POE to be reasonable. The DAB planned for July 1992 has been slipped at least one year.

l. Contract Information (In Millions of Then-Year Dollars) --

(1) Contractor(s): Martin Marietta
(2) Contract Title: Titan IV
(3) Contract Number:F04701-85-C-0019
(4) Actual Cost of Work Performed (ACWP) to date: 6709.9
(5) Percent contract completed (BCWP/target cost): 70.00

12. **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-414.9/-8.15%	$-206.4/-3.90%
Previous SAR	$-477.9/-8.09%	$-215.3/-3.35%
Current values	$-496.0/-8.10%	$-207.7/-3.23%
Change from the baseline SAR	$-81.1/+0.05%	$-1.3/+0.67%
Change from the previous SAR	$-18.1/-0.01%	$+7.6/+0.12%

(7) Explanation of Variances. -

The unfavorable cost variance is due to (1) General Dynamics Space Systems (GDSS) Forward Pricing Rate changes (2) LC-40 extended support for finishing costs to complete the LC-40 development effort (IE: Heating/Ventilation/Air Conditioning (HVAC), crane control consoles and activity to complete prior to site turnover to the operational users) (3) GDSS schedule extension.

(8) Impact of Variances on Contract. -

The unfavorable cost and schedule variances indicate that the contract is in an overrun condition. We expect this condition to continue, however it is not anticipated that these costs will exceed government liability.

(9) Impact of Variances on Unit Costs. -

We expect the unit cost to continue to increase due to the overrun condition.

(1) Contractor(s): Martin Marietta
(2) Contract Title: UNIFIED PAYLOAD INT
(3) Contract Number:F04701-92-C-0028
(4) Actual Cost of Work Performed (ACWP) to date: 57.7
(5) Percent contract completed (BCWP/target cost): 10.10
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A	N/A
Previous SAR	N/A	N/A
Current values	$+8.5/N/A	$-6.4/N/A
Change from the baseline SAR	$+8.5/N/A	$-6.4/N/A
Change from the previous SAR	$+8.5/N/A	$-6.4/N/A

12. **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

(7) Explanation of Variances. -

The favorable cost variance is due primarily to deferral of work. The unfavorable schedule variance is due to the delay in mission requirements and pending rebaselining.

(8) Impact of Variances on Contract. -

The current variance is due primarily to the deferral of work based on current mission manifest loading. As mission requirements proceed and complete, this cost variance will eventually be reduced.

(9) Impact of Variances on Unit Costs. - None.

m. Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	641.1	1888.1	0.0	2529.2
Previous Changes:				
Economic	-8.7	+234.2	+7.2	+232.7
Quantity	-	+8995.6	-	+8995.6
Schedule	+150.8	+1618.3	+5.0	+1774.1
Engineering	+675.4	-2283.4	-	-1608.0
Estimating	+1276.1	+4966.3	+114.2	+6356.6
Other	-	-	-	-
Support	+597.6	+3856.4	-	+4454.0
Subtotal	+2691.2	+17387.4	+126.4	+20205.0
Current Changes:				
Economic	-72.5	-1004.2	-0.6	-1077.3
Quantity	-	-	-	-
Schedule	-	+427.8	-	+427.8
Engineering	+86.8	-	-	+86.8
Estimating	+61.0	+4056.3	+0.6	+4117.9
Other	-	-	-	-
Support	+256.0	+396.5	-	+652.5
Subtotal	+331.3	+3876.4	-	+4207.7
Total Changes	+3022.5	+21263.8	+126.4	+24412.7
Current Estimate	3663.6	23151.9	126.4	26941.9

13a. **Cost Variance Analysis (Cont'd):**

a. Summary (FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	579.7	1570.8	0.0	2150.5
Previous Changes:				
Quantity	-	+6465.0	-	+6465.0
Schedule	+85.0	+521.8	-	+606.8
Engineering	+499.1	-1595.1	-	-1096.0
Estimating	+934.3	+3564.3	+97.0	+4595.6
Other	-	-	-	-
Support	+480.4	+2672.1	-	+3152.5
Subtotal	+1998.8	+11628.1	+97.0	+13723.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+62.9	-	-	+62.9
Estimating	+43.1	+2803.4	+0.5	+2847.0
Other	-	-	-	-
Support	+150.9	+270.0	-	+420.9
Subtotal	+256.9	+3073.4	+0.5	+3330.8
Total Changes	+2255.7	+14701.5	+97.5	+17054.7
Current Estimate	2835.4	16272.3	97.5	19205.2

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Schedule: Impact on integration costs due to program stretch-out from FY00 to FY05;

Engineering: Design effort for satellite dual compatibility; Continued effort for a second west coast Titan IV launch pad development at VAFB, CA; SRMU development FY94-95; P3I and range safety design modifications.

Estimating: Recurring and nonrecurring payload integration revised estimates; Transfer to procurement of funds for previously designated shuttle missions; Transfer of outyear funds from procurement;

13b. **Cost Variance Analysis (Cont'd):**

Gramm/Rudman/Hollings reductions; Adjustment for outyear escalation; Lower Centaur unit price as a result of negotiations; Funding for Centaur development and projected contractor overrun, additional FCRC support for increased program scope, facility design support for the Solid Motor Assembly and Readiness Facility (SMARF) and Centaur Processing Facility (CPF); Payload integration of missions due to increased program scope for FY96-97; Single Best Estimate (SBE) update for SRMU development amortization; reduced outyear mission model; addition of M Account funds to offset prior year overrun; deletion of SLC-6 development; negotiated cost adjustment for LC-40 and CPF; hardware storage and SRMU costs due to program stretch-out.

Support: Additional support equipment for accelerated activation at the CCAFS, FL, launch site; Facility design for the new Centaur Processing Facility and upgrades to the SRM testing facility at CCAFS, FL; Second west coast launch pad modification to change from shuttle to Titan IV capability at VAFB, CA. Partial funding for LC-40 facility upgrade to protect Mars Observer mission schedule.

Procurement

Economic: Revised economic escalation indices.

Quantity: Additional hardware costs (from 10 to 75 vehicles); Reduced vehicle quantity (from 75 to 65).

Schedule: Change due to rephasing of production build schedule; Accelerated buy of original 23 vehicles; Adjustments to vehicle launch requirements to comply with Oct 91 SLAG; Impact due to slowed down production schedule.

Engineering: Additional hardware to accommodate satellite dual compatibility and mission requirements precluding Centaur upper stages; Initial hardware for an upgraded solid rocket motor; Mission requirements preclude the need to procure Centaur upper stages for eleven Titan IVs; Tooling to support an increased production rate at contractor's facility.

Estimating: Recategorization of Flyaway/Support cost reported in December 1985 SAR, Transfer from RDT&E of funds for previously designated shuttle missions; Transfer of outyear funds to RDT&E; Centaur procurement due to STS/Centaur cancellation; Deletion of classified user operation and maintenance funds; Gramm/Rudman/Hollings

13b. Cost Variance Analysis (Cont'd):

reductions; Funding reductions due to budget cycle reviews; Unit price benefits of increased quantity buy; Adjustment for current and prior year escalation changes; Realignment to support programmatic changes; Increased government involvement in plant inspections; Additional tooling to support higher productivity capacity; Additional FCRC engineering support as a result of increased program scope; Procurement of an additional payload fairing to support satellite integration on Titan IV; Contractor launch incentives required for additional vehicles; Propellant requirements for additional vehicles; Payload integration of additional missions; negotiation of the follow-on buy; Vehicle configuration changes; Revised contractor incentive plan; Multiyear rephase funding adjustment; Incremental funding adjustment; Communication equipment for second west coast pad at VAFB, CA; Addition of M Account funds for prior year overrun; Correction to Dec 90 SAR entry; Recategorization of Jun 91 SAR cost change from estimating to support; Cost impact of stretched program on incentives, propellants, manifest planning,integration and production cost.

Support: Accelerated procurement of support equipment at the CCAFS, FL, launch site and recategorization of Flyaway/Support costs reported in December 1985 SAR; Initial AGE and communication equipment requirements to support launch requirements at CCAFS, FL and VAFB, CA; AGE for second west coast launch pad at VAFB, CA; AGE requirements at CCAFS, FL to support increased program scope and duration (includes new SMARF); Deletion of SLC-6 AGE and communication equipment; Transfer of launch processing costs from O&M to the Procurement appropriation; Recategorization of Jun 91 SAR cost change from estimating to support; Correction to Dec 90 SAR entry; Updated estimate to reflect four additional years of launch operations and impacts to other support requirements; Additional technical support for SRMU production; Adjustment for current and prior year escalation offset.

MILCON

Economic: Revised economic inflation indices.

Schedule: Change due to rephasing of build schedule.

Estimating: Adjustment for current and prior year escalation

13b. Cost Variance Analysis (Cont'd):

offset; Realignment of the second Titan IV launch pad costs into outyears; Funds added/realigned for SMARF and the Centaur Processing Facility at CCAFS, FL; Refined costs for Centaur Processing Facility based on contractor proposal; Reduction in SLC-6 facility costs related to deletion of AGE and communication equipment requirements; Reduction in SMARF funding due to contract underrun.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	--	-72.5
Revised Flight Termination System block upgrade beginning on vehicle #24 and lightning towers for LC-41 (Engineering)	+62.9	+86.8
Revised Payload Integration estimate due to program stretch-out (Estimating)	+49.2	+67.8
SRMU Amortization, Working Capital Adjustment and Claims (Support)	+150.9	+256.0
Adjustment for current and prior year Escalation. (Estimating)	-6.1	-6.8
RDT&E Subtotal	+256.9	+331.3
(2) Procurement		
Revised economic escalation indices (Economic)	--	-1004.2
Delay in mission requirements deferred procurement of booster hardware for vehicles 42 thru 65 (42+) by one year. year (Schedule)	--	+427.8
Additional storage to support reduction of launch requirements (Estimating)	+192.9	+201.5
Production rate slowdown from 5.5 to 3 vehicles per year results in increased cost for vehicles 42 thru 65. (Estimating)	+2443.0	+3608.5
Increase of stockfund prices for flight propellants (Estimating)	+93.2	+144.3
Added program impovements (Continuous Product/Process Improvements) and Industrial Modernization (Estimating)	+32.7	+45.3

13c. **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
Revised estimate for launch operations, storage and sustaining engineering due to program stretchout. (Support)	+175.7	+271.5
Disposition of Government-owned, contractor operated facilities. (Support)	+94.3	+125.0
Adjustment for current and prior year escalation. (Estimating)	+41.6	+56.7
Procurement Subtotal	+3073.4	+3876.4
(3) MILCON		
Revised economic escalation indices. (Economic)		-0.6
Adjustment for current and prior year escalation (Estimating)	+0.5	+0.6
MILCON Subtotal	+0.5	--

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
252.92	-12.99	-75.61	33.88	-23.40	161.15	--	78.56	161.59	414.49

15. **Contract Information** (Then-Year Dollars in Millions):

a. RDT&E --

Titan IV:
Martin Marietta, Denver, CO
F04701-85-C-0019, FPIF
Award: February 28, 1985
Definitized: March 1, 1985

Initial Contract Price		
Target	Ceiling	Qty
$2095.8	$2287.8	10

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$9780.0	$10536.0	41	$10292.0	$10536.0

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-521.4	$-238.3
Cumulative Variances To Date (04/25/93)	$-529.7	$-244.6
Net Change	$-8.3	$-6.3

Explanation of Change:

Explanation of change in target and ceiling prices: The following Titan Program effort was added to the -0019 contract since the previous report: Slowdown of production rate, Chemical System Division buildout and fly of ten additional Solid Rocket Motor flight sets, and additional Wideband Instrumentation System kits.

Explanation of current changes: The unfavorable cost variance is due to (1) General Dynamics Space Systems (GDSS) overhead incorporation (2) LC-40 extended support for some contractor punchlist items (3) GDSS schedule extension. The schedule variance increase is primarily attributed to delays in the delivery of liquid rocket engines, aerospace ground equipment, and SRMU development and qualification test problems.

Explanation of cumulative changes: The unfavorable cost variance is due to engineering changes, new and reworked tooling requirements, additional design and test complexities, design and qualification problems at Hercules Aerospace Corporation, increase manpower in support of facility activation by VAFB operations, increase manpower to support test facilities at Chemical Systems Division, a forward pricing rate impact experienced by the contractor, higher LC-40 procurement and construction cost, and an increase of the sub-contractors estimate at completion. There is a potential requirement for increased budget in the out-years due to unfavorable contractor cost variance in SRMU test delays. The negative schedule variance is due to late deliveries of sub-contract components at Chemical Systems Division, part shortages at General Dynamics, and qualification testing delays at Hercules Aerospace.

Prior year variances for Procurement contract line items (CLINs) will result in raising the CLIN billing prices above target as soon as funds are identified to cover the FY87-FY88 variances.
Current and prior year variances for LC-40 RDT&E CLINS will result in raising the CLIN billing prices above target as soon as funds are identified to cover the FY91-FY92 variances.

Note: Contract F04701-85-C-0019 is categorized as FPIF/CPFF/CPAF/AF/CS/CR/MSI/FFP and includes RDT&E, Procurement, and O&M.

15. Contract Information (Cont'd):

b. Procurement --

UNIFIED PAYLOAD INT:
Martin Marietta, Denver, CO
F04701-92-C-0028, CPAF
Award: June 30, 1992
Definitized: June 30, 1992

Initial Contract Price		
Target	Ceiling	Qty
$673.5	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$671.4	N/A	0	$671.4	$671.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$16.8	$-6.2
Cumulative Variances To Date (04/25/93)	$17.2	$-5.4
Net Change	$0.4	$0.8

Explanation of Change:

Note: Contract F04701-92-C-0028 is categorized as CPAF and includes RDT&E and Procurement.

The favorable cost variance is due primarily to deferral work. The favorable schedule variance is due to the delay in mission requirements and pending rebaselining.

This is the first time this contract is reported in the SAR.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 42.9% (9 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 36.5% ($9831.6 / $26941.9)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY85-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2005)	Total
RDT&E	2020.4	326.4	133.0	1183.8	3663.6
Procurement	7684.8	1475.9	1248.2	12743.0	23151.9
MILCON	126.4	-	-	-	126.4
O&M	-	-	-	-	-
Total	9831.6	1802.3	1381.2	13926.8	26941.9

Note: RDT&E FY86, FY87, and FY88 amounts include the purchase of two RDT&E-funded Centaurs originally designed for the Shuttle RDT&E missions.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1985				32.9	33.6	33.6	33.6	3.4
1986				247.3	258.4	258.4	258.4	2.8
1987				160.9	175.7	175.7	175.7	2.7
1988				316.1	356.3	356.3	338.8	3.0
1989				354.4	412.9	412.9	401.3	4.2
1990				288.1	348.9	348.9	347.0	4.0
1991				131.3	164.8	164.8	146.0	4.3

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1992				110.0	141.5	136.5	90.5	2.8
1993				97.5	128.3	80.8	4.1	2.4
1994				242.3	326.4			2.3
1995				96.5	133.0			2.3
1996				72.2	101.8			2.3
1997				61.0	87.8			2.2
1998				55.8	82.1			2.2
1999				53.4	80.3			2.2
2000				93.2	143.3			2.2
2001				95.5	150.0			2.2
2002				103.5	166.2			2.2
2003				103.7	170.1			2.2
2004				81.2	136.1			2.2
2005				38.6	66.1			2.2
Subtot				2835.4	3663.6	1967.9	1795.4	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force								
1985		42.7	69.7	112.4	118.5	118.5	118.5	3.4
1986		36.9	385.4	471.2	519.7	519.7	519.7	2.8
1987	2	90.5	592.3	766.8	881.8	881.8	881.8	2.7
1988	6	193.0	653.7	945.2	1130.4	1130.4	1101.7	2.9
1989	5	215.4	503.9	873.6	1086.8	1086.8	945.8	4.2
1990	5	164.0	546.0	855.1	1082.6	1082.6	770.3	4.0
1991	5	233.1	332.9	715.8	932.0	928.9	710.4	4.3
1992	6	270.1	252.8	754.2	994.0	982.2	670.9	2.8
1993	6	341.4	215.9	696.1	939.0	559.9	15.4	2.4
1994	6	387.3	354.5	1069.5	1475.9			2.4
1995		287.8	420.7	884.6	1248.2			2.3
1996	1	222.8	518.0	944.1	1361.4			2.3
1997	3	341.3	622.9	1129.6	1665.1			2.2
1998	2	313.2	632.2	1035.7	1559.8			2.2
1999	4	169.5	629.5	886.6	1364.5			2.2
2000	4	145.6	611.4	844.6	1328.6			2.2
2001	4	210.2	615.7	914.4	1470.4			2.2
2002	4	223.6	420.6	863.6	1418.9			2.2

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
2003	2	190.2	141.5	714.4	1199.4			2.2
2004		160.5	0.5	487.5	836.5			2.2
2005		95.0		307.0	538.4			2.2
Subtot	65	4334.1	8520.1	16272.0	23151.9	7290.8	5734.5	
Appropriation: 3300 Military Construction, Air Force								
1990				46.9	59.4	47.8	43.9	4.0
1991				7.7	10.0	10.0		4.3
1992				18.3	24.0	14.3	0.9	2.9
1993				24.6	33.0			2.4
Subtot				97.5	126.4	72.1	44.8	
Grand Total	65	4334.1	8520.1	19204.9	26941.9	9330.8	7574.7	

Note: Obligation and expenditure information reflects official accounting records as of 31 Mar 93.

17. **Production Rate Data:**

a. Production Baseline Rate

Annual production rate was approved at milestone III schedule. 11 core vehicle per annum=contract baseline production rate. 5.5 core vehicles per annum=contract production slowdown I core vehicle build rate to meet mission manifest requirements as documented in the FY93 President's Budget submission.

3 core vehicles per annum=projected slowdown II core vehicle build rate to meet mission manifest requirement as documented in the FY94 President's Budget submission and the October 1992 Space Launch Advisory Group (SLAG)

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		1475.9		N/A	N/A
Procurement Qty		6		N/A	N/A
Proc. Unit Cost	N/A	245.983	N/A	N/A	N/A
FY 1995					
Procurement Cost		1248.2		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		12743.0		N/A	N/A

Cost Variance Note: Maximum Economic costs do not reflect the costs for any additional tooling or other potential nonrecurring costs. Costs shown here represent only a lower hardware unit cost resulting from an increased production rate.

Schedule Variance Note: Current program requirements do not reflect the need to increase production to the maximum rate.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	23/23

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The costs for launch processing are based on actual contract values for the current Titan IV program and were transferred from operation and support costs to procurement costs in conjunction with the FY92/93 President's Budget. Thus, these costs are not included below. Range costs continue to be carried as operation and support costs. Range costs are based on current and historical data from the Titan IV and Titan 34D programs.

b. Costs -- (FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Titan IV Launch	Avg Annual Cost Per Titan 34D Launch
Range Support	7.5	7.5
Total	7.5	7.5

c. Contractor Support Costs -- None.

Note: All costs described in Section 18.b. are "average cost per launch" and not "average annual."

AF-19 JSTARS

92-097

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(QSA)823)
PROGRAM: Joint STARS

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Joint STARS

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
Joint STARS Program Office
Electronic Systems Division
3 Eglin Street
Hanscom AFB, MA 01731-5000

Col Bruce D. Mills
Assigned: December 17, 1992
AV 478-5725 COMM (617)377-5725

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603770F
PE 0604270F Project 3894 (Shared)
PE 0604616F, 0604770D, 0604770F
PROCUREMENT:
APPN 3010 ICN 27581F (Air Force)

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DEPARTMENT OF DEFENSE
SAF/PAS

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~~Declassify on: OADR~~
~~Downgrade Instructions: Not Subject to Automatic Downgrade~~

~~SECRET~~

OASD(PA) DFOISR 93-C-414

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 0604770F

5. (U) Related Programs:
Global Positioning System (GPS), Joint Tactical Information Distribution System (JTIDS), Single Channel Ground Air Radar System (SINCGARS), Inertial Navigation Unit (INU), E-8 (formally C-18), HAVE QUICK, E-6, HAVE SYNC.

6. (U) Mission and Description:
The Joint Surveillance Target Attack Radar System (Joint STARS) is a Joint Army and Air Force Program, with the Air Force as lead service. The Joint STARS system provides real-time wide area surveillance of the battlefield and rear echelons. Joint STARS is unique because it detects and tracks enemy armor, vehicles, and troops over a wide-area in real-time using moving target indicator (MTI) and synthetic aperture radar (SAR) techniques. Joint STARS also provides precise real-time targeting information to direct attack aircraft, friendly artillery, and standoff missile batteries thereby reducing interdiction missions. Joint STARS unique capabilities can give the Corps Commander a near real-time look at enemy first and second echelon force buildups, force movements, and the enemy's scheme-of-maneuver on the battlefield. This early information on the enemy's battle plan will allow friendly forces to act, before the enemy plan is executed and maneuver with economy of force to engage the enemy at a time and place of the Corps Commander's own choosing. There is no antecedent system.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In May 82, an OSD/USDRE memorandum directed that a Joint Air Force/Army Program Management Office be established, under Air Force lead, to develop a single multi-mode target acquisition and weapon guidance system. The Joint STARS Program resulted from this directive and was organized from PAVE MOVER and Standoff Target Acquisition System (SOTAS) Program Offices.

Based on the May 84 agreement by Air Force and Army Chiefs of Staff, the joint program began development of the airborne segment using the E-8A (a Boeing 707-320 class aircraft converted to military use). Following the meeting of the Defense System Acquisition Review Council in Aug 85 (Milestone IIA), a Secretary of Defense Decision Memorandum directed initiation of Full Scale Development (FSD) of the airborne segment.

On 27 Sep 85 the FSD contract for the airborne segment of Joint STARS was awarded to Grumman Aerospace Corporation. Boeing Military

7a. (U) Program Highlights (Cont'd):

Airplane Company, a subcontractor to Grumman Melbourne Systems Division (GMSD), completed refurbishment and modification of the first Joint STARS FSD aircraft and delivered it to GMSD, Jul 87.

The OSD-directed Operational Utility Evaluation (OUE) was completed during 1987 and concluded that the proposed Joint STARS system was the only alternative that would meet the Air Force/Army requirements under realistic conditions. The study also concluded Joint STARS would survive in European wartime conditions and that survivability would be enhanced by an electronic self defense suite.

In Apr 88, the first flight test of the Joint STARS aircraft took place and the System Preliminary Design Review (PDR) was conducted. Milestone IIB was completed with a signed Air Force Acquisition Decision Memorandum, dated 5 Jul 88. Direction approved procurement of 21 new 707 aircraft vs 10 used, a Self Defense Suite (SDS) development, Mission and Flight Simulators, and Reliability Improvements.

The first Phase IV radar flight occurred on 22 Dec 88. During Dec 88, the first increment of the Critical Design Review (CDR) was conducted and an operating Joint STARS radar flew for the first time. The Acquisition Decision Memorandum (ADM) signed by Defense Acquisition Executive (DAE) on 9 Nov 89 approved the restructured program as presented by the Air Force, which resulted in direction for used 707 aircraft as the Joint STARS platform.

The program completed an Early Look deployment in Europe in Feb 90. Operation Field Demonstration was performed during Sep-Oct 90, which involved a detailed system demonstration in conjunction with 4 GSMs. The follow-on FSD contract which includes a third FSD aircraft in a production configuration baseline, was awarded in Nov 90. Both E-8A test aircraft and 6 GSMs were deployed to Desert Shield/Storm in Jan 91. Both aircraft returned from Saudi Arabia on 6 March after a very successful deployment.

In Apr 91, Robins AFB, GA was selected as the Main Operating Base (MOB). To help compensate for program delay, associated with Desert Storm, a System Level Performance Evaluation (SLPE) was added to determine maturity of the system and other data to satisfy exit criteria for the advanced buy decision in Jan 92. In Sep 91, SLPE, was started. The results of SLPE fully supported the exit criteria.

On 15 Nov 91, the Joint STARS Four Star Summit examined Joint STARS operating command requirements, system requirement changes, operational concept changes resulting from lessons learned in Desert Storm, and the status of the development and production

7a. (U) Program Highlights (Cont'd):

representative aircraft be maintained in a condition that would allow two aircraft to be deployed within 60 days.

b. (U) Significant Developments Since Last Report --
With the formalization of Integrated Weapon System Management (IWSM), the Joint STARS Depot Support Division (JSD), located at Robins AFB, GA, was established under the Deputy for System Support to manage both the programmatic and logistics support activities necessary to activate the Joint STARS Depot and for providing the long-term logistics support and off-equipment maintenance capabilities needed to support Joint STARS, after it is fielded. In May 92, the basing scenario was changed from two Forward Operating Bases (FOB) to two Forward Operating Locations (FOL). Under this scenario, fewer facilities would be built at the FOLs due to fewer deployed aircraft. Since most of the aircraft would be based at Robins AFB, its facilities requirements increased, but were off-set by decreases in net construction costs at the FOLs.

A maturity assessment of the System Level Performance Evaluation (SLPE) and the Joint STARS system demonstrated the ability of the system to evolve to full Milestone III capability. The Follow-on FSD (3rd Aircraft) development contract was definitized and negotiated. The program office was intensely involved in preparing for the DAB Program Review for LRIP (PRLRIP - formerly called Milestone IIIA). One major step in this effort was the System Level Performance Verification (SLPV). By year's end, most of the DAB critical flights had been flown and the ability to meet most PRLRIP Exit Criteria had been demonstrated. These flights will continue well into the new year, with DAB critical flights scheduled for completion in Mar 93.

Funding for a 2nd aircraft in FY93 was appropriated in the FY93 PB.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --
The System CDR was successfully completed in Feb 93. DAB Critical SLPV testing was completed, with all PRLRIP Exit Criteria met. A draft copy of the Development Test and Evaluation (DT&E) Report was forwarded to the PEO in advance of the 5 Mar due date for draft DAB Documentation. The Integrated Program Summary (IPS), and the Cost Analysis Requirements Descriptions (CARD) were forwarded.

8. (U) Threshold Breaches:
Delivery of the Software Support Facility from 2QFY95 to 3QFY96 (14 months) is a schedule breach to the APB. Revised APB has been submitted. There are no Nunn-McCurdy Unit Cost Breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone IIA	SEP 85	SEP 85	SEP 85
FSD Contract Award	SEP 85	SEP 85	SEP 85
Preliminary Design Review (PDR) Hardware	MAY 86	N/A	MAY 86
PDR Software	MAR 87	N/A	MAR 87
Critical Design Review (CDR) Hardware	DEC 86	N/A	DEC 86
First Test Flight	APR 88	APR 88	APR 88
Milestone IIB	APR 88	APR 88	APR 88
System CDR	NOV 88	NOV 88	NOV 88
Contractor Flight Test Start	APR 89	APR 89	APR 89
Operational Field Demo I	N/A	JUL 90	SEP 90
System-level Perf. Verf.-start	NOV 90	SEP 91	OCT 91
DT&E/IOT&E Start	FEB 91	JUN 91	DEL (Ch-1)
Milestone III	DEC 91	N/A	OCT 95(Ch-5)
Milestone IIIA	N/A	MAR 93	DEL (Ch-2)
Software Support Facility Delivery	N/A	MAR 95	MAY 96(Ch-3)
Flight/Mission Simulator Delivery	N/A	DEC 95	MAY 96(Ch-4)
Milestone IIIB	N/A	SEP 95	DEL (Ch-5)
Self Defense Suite (SDS) Flight Test	DEC 92	JUN 95	DEL (Ch-6)
SDS Production Decision	OCT 93	MAR 97	DEL (Ch-7)
First Aircraft Delivery to TAC	MAR 94	SEP 95	FEB 96(Ch-8)
First Training Squad Ready for Trng	N/A	DEC 95	MAR 96(Ch-8)
Depot Activation	N/A	DEC 95	JAN 96(Ch-8)
First SDS Installation	JAN 95	N/A	FEB 96(Ch-9)
SDS Test Complete	N/A	SEP 96	DEL (Ch-9)
IOC	SEP 96	MAR 97	MAR 97
Program Mgt Responsiblity Transfer (PMRT)	N/A	MAR 97	DEL (Ch-10)
Mature Reliability	N/A	SEP 98	SEP 98
Last Aircraft Delivery	SEP 00	N/A	DEL (Ch-11)
DT&E Start	N/A	N/A	OCT 91(Ch-1)
DT&E Complete	N/A	N/A	DEC 94(Ch-1)
MOT&E Start	N/A	N/A	DEC 94(Ch-1)
MOT&E Complete	N/A	N/A	AUG 95(Ch-1)
Required Assets Availability (RAA)	N/A	N/A	MAR 97(Ch-12)
DAB Program Review for LRIP	N/A	N/A	MAY 93(Ch-2)

b. (U) Previous Change Explanations --

Delay in SDS program due to reduction in funding. SLPV and GDT&E/IOT&E rescheduled to agree with OCT 89 DAB restructured program. Milestone III broken out into IIIA (Low Rate Production) and IIIB (Full Production). Milestones were TBD as the Joint STARS System could not meet ADM directed schedule requirements with the

9b. (U) Schedule (Cont'd):
inadequate funding directed in the FY 91 Amended President's Budget. Operational Field Demo milestone added to SAR reporting. Milestones reported as TBD were changed to reflect FY92/93 President's Budget. SLFV estimate changed from Mar 91 to Oct 91 to reflect actual start date. DT&E/IOT&E milestone changed from Jun 91 to Oct 91 to reflect actual start date.

c. (U) Current Change Explanations --

(Ch-1) The "DT&E/IOT&E START" milestone has been replaced by four separate new milestones: "DT&E START, DT&E COMPLETE, MOT&E START, and MOT&E COMPLETE" per the recommendation of DDDR&E (T&E).

(Ch-2) Per 5000.2, Milestone IIIA has been changed to DAB Program Review, LRIP.

(Ch-3) "Software Support Facility Delivery" changed from Mar 95 to to May 96 due to restructuring and rephasing resulting from the FY94 Amended President's Budget. Interim Contractor Support will be used to provide alternate support until the facility is delivered. This milestone is the only baseline schedule change beyond six month breach window. The "Software Support Facility Delivery" has been defined as "Mission Software Support Facility (MSSF) Phase 1".

(Ch-4) The "Flight/Mission Simulator Delivery" has been defined as the "Mission Crew Training Capability (MCTC) Phase 1" and the "Joint Flight Crew Training System (J-FCTS) Phase 1". Dates have been changed from Dec 95 to May 96 as a result of the above restructuring/rephasing.

(Ch-5) Per 5000.2, "Milestone IIIB" has been changed to "Milestone III".

(Ch-6) The "Self Defense Suite (SDS) Flight Test" milestone has been deleted. Due to funding constraints, SDS now consists primarily of incrementally phased situation awareness functionality.

(Ch-7) The "Self Defense Suite (SDS) Production Decision" milestone has been deleted since SDS is an integral part of Joint STARS production decision.

(Ch-8) "First A/C delivery to ACC" (changed from TAC) from Sep 95 to Feb 96, "First Training Squadron ready for Training" changed from Dec 95 to Mar 96, and "Depot Activation" changed from Dec 95 to Jan 96 due to delays in E-8A testing, delays in simulator deliveries, and budgetary constraints, respectively.

(Ch-9) "SDS Test Complete" has been deleted and replaced with "First

9c. (U) Schedule (Cont'd):
SDS Installation", defined as group A installation delivered in the first production aircraft.

(Ch-10) "PMRT" has been deleted under Integrated Weapon Systems Management (IWSM) concept.

(Ch-11) The "Last Aircraft Delivery" has been deleted to match approved Acquisition Program Baseline.

(Ch-12) RAA defined as being ready to execute maintenance concept as specified in the Integrated Logistics Support Plan.

d. (U) References --

(U) Development Estimate:
ADM dated 5 Jul 88, subject "Joint Surveillance Target Attack Radar System: Milestone IIB Acquisition Decision Memorandum".

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 27 November 1991.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate

(b)(1)

[redacted]

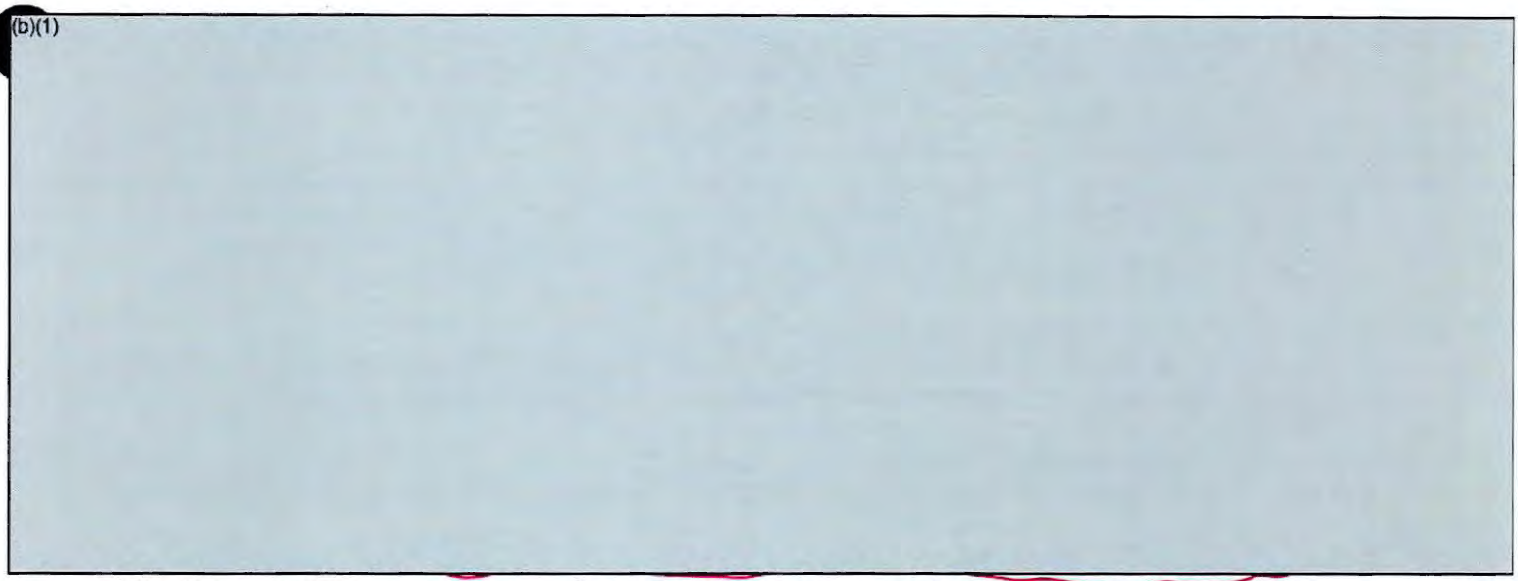
10a. (U) Performance Characteristics (Cont'd):

DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)			

(b)(1)

(b)(1)

(b)(1)



11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1448.2	1993.6	2611.5
Procurement	3192.8	2759.1	2865.7
Recurring	(2481.1)		(2258.5)
Non-Recurring	(182.7)		(11.0)
Total Flyaway	(2663.8)		(2269.5)
Other Wpn Sys	(286.4)		(274.9)
Peculiar Support	(0.0)		(65.6)
Initial Spares	(242.6)		(255.7)
Construction (MILCON)	87.8	104.1	104.4
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year $	4728.8	4856.8	5581.6
Escalation	2013.1	2091.5	2818.0
Development (RDT&E)	(315.0)	(532.4)	(944.9)
Procurement	(1658.1)	(1496.7)	(1819.2)
Construction (MILCON)	(40.0)	(62.4)	(53.9)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6741.9	6948.3	8399.6
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	21	19	19
Total	21	19	19

The procurement quantity includes two FSD aircraft which will be refurbished and fully configured into E-8Cs in FY00.

11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
ADM dated 5 Jul 88, subject "Joint Surveillance Target Attack Radar System: Milestone IIB Acquisition Decision Memorandum".

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 27 November 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	8399.6	7370.7	8399.6
(2) Quantity	19	19	19
(3) Unit Cost	442.08	387.93	442.08
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	607.3	607.3	409.0
Less CY Adv Proc	78.3	78.3	123.7
Plus PY Adv Proc	125.4	125.4	78.3
Net Total	654.4	654.4	363.6
(2) Quantity	2	2	1
(3) Unit Cost	327.20	327.20	363.60

Aircraft added to FY93

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1763.2	4850.9	127.8	6741.9
Previous Changes:				
Economic	-3.8	+497.1	+8.8	+502.1
Quantity	-	-370.1	-	-370.1
Schedule	+84.3	+66.5	-	+150.8
Engineering	+371.8	-732.9	-	-361.1
Estimating	+466.1	+321.4	+39.4	+826.9
Other	-	-	-	-
Support	-	-119.8	-	-119.8
Subtotal	+918.4	-337.8	+48.2	+628.8
Current Changes:				
Economic	-15.2	-235.4	-6.8	-257.4
Quantity	-	-	-	-
Schedule	+420.0	+101.0	-	+521.0
Engineering	-	-	-	-
Estimating	+470.0	+125.9	-10.9	+585.0
Other	-	-	-	-
Support	-	+180.2	-	+180.2
Subtotal	+874.8	+171.7	-17.7	+1028.8
Total Changes	+1793.2	-166.1	+30.5	+1657.6
Adjustments	-	+0.1	-	+0.1
Current Estimate	3556.4	4684.9	158.3	8399.6

SB 1657.7

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1448.2	3192.8	87.8	4728.8
Previous Changes:				
Quantity	-	-234.2	-	-234.2
Schedule	+56.9	-	-	+56.9
Engineering	+250.2	-412.3	-	-162.1
Estimating	+304.4	+132.7	+22.0	+459.1
Other	-	-	-	-
Support	-	-31.8	-	-31.8
Subtotal	+611.5	-545.6	+22.0	+87.9
Current Changes:				
Quantity	-	-	-	-
Schedule	+251.8	+38.8	-	+290.6
Engineering	-	-	-	-
Estimating	+300.0	+80.6	-5.5	+375.1
Other	-	-	-	-
Support	-	+99.0	-	+99.0
Subtotal	+551.8	+218.4	-5.5	+764.7
Total Changes	+1163.3	-327.2	+16.5	+852.6
Adjustments	-	+0.1	+0.1	+0.2
Current Estimate	2611.5	2865.7	104.4	5581.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic inflation indices.

Schedule: Program rephasing from FY94 to FY98 to accommodate reductions.

Engineering: Revised FSD requirements for used vs. new aircraft.

Estimating: Adjustment for current and prior year escalation changes. Budgetary reprogrammings and reductions. Revised estimate to reflect current funding. Increased requirements from realignment of Oct 89 DAB to FY92/93 PB. Realignment of funds for contract management of Defense Business Operaing

13b. (U) Cost Variance Analysis (Cont'd):

Fund (DBOF). Reduction of Program Office contract support by Congressional action. Reprogramming of FY91 funds to the Sensor Fuzed Weapon Program. Addition of FY99 funding to extend Program Office operations. Reduction of FY92 funds to reflect contract manpower travel savings per Congressional action and reduction of FY90 to reflect actual costs.

Procurement

Economic:	Revised economic inflation indices.
Quantity:	Reduction from 21 to 19 aircraft.
Schedule:	Deferral of 2 units to FY98. Realigned production profile from FY91-FY98 to FY92-FY99.
Engineering:	Decrease in production requirements due to change from new to used aircraft platform.
Estimating:	Refinement and rephasing of program estimate. Revised estimate to reflect current funding. Increase in program estimate for learning as a result of decreased quantities. Realignment to support acceleration of advanced procurement for two aircraft. Realignment of funds for contract management of DBOF. Reduction of program office contract support by Congressional action. Realignment of FY98 funding to reflect actual requirement. Realignment of Ground Support Systems effort from Flyaway to Other Weapon Systems.
Support:	Increase to initial spares and support equipment associated with the realigned production profile. Decrease in initial spares and support equipment requirements associated with the change in new vs. used platforms. Realignment of initial spares funds for Stock Fund implementation. Reprogramming of common support equipment funds to Joint STARS. Realignment of Ground Support Systems effort from Flyaway to Other Weapon Systems.

MILCON

Economic:	Revised economic inflation indices.
Estimating:	Revised estimate to reflect current funding. Budgetary reduction of FY93 funds. Revised estimate to reflect site change. Reprogramming Depot ATF funding to Joint STARS. Addition of FY98 funding.

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic inflation indices (Economic)	N/A	-15.2
Additional FY00 and FY01 funding to complete program effort beyond FYDP (Schedule)	+251.8	+420.0
Adjustment for current and prior year escalation. (Estimating)	-2.6	-2.5
Ground Support Systems (GSS) rephased due to FY93 appropriation bill cut (Estimating)	-15.9	-22.5
Reprogramming of FY90 and FY91 funds to actual contract price (Estimating)	-0.3	-0.4
SDS and Maintenance Trainers rephased due to funding constraints in FY92 and FY93 (Estimating)	-16.8	-23.7
FY94 BES Realignment of Product Improvement funds (Estimating)	-0.8	-1.4
FY94 BES Realignment of GSS funds (Estimating)	+0.1	--
Funding Reductions resulted in rephasing of effort (Product and Readiness Improvement) and deletion of effort (CTOS restructure, SDS Blk 2B, and 2nd & 3rd A/C Instrumentation) (Estimating)	-36.9	-57.1
Additional programmed funds for Product Improvement, GSS, SDS, Misc Efforts (RIP, Flight Crew, ECO), and SPO Support (Estimating)	+373.2	+577.6
RDT&E Subtotal	+551.8	+874.8
(2) Procurement		
Revised economic inflation indices (Economic)	N/A	-235.4
Buy profile of 17 aircraft plus 2 refurbished stretched to FY00 (Schedule)	+38.8	+101.0
Adjustment for current and prior year escalation (Estimating)	+8.6	+13.1

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Funding changes in advance procurement in FY93 and out. (Estimating)	+0.2	-0.1
Reductions to Self Defense Suite in due to funding constraints (Estimating)	-32.4	-52.4
Program office estimate for Flyaway increased to match revised schedule (Estimating)	+88.1	+139.7
Program office estimate for SDS revised for current program (Estimating)	+34.1	+56.8
Revised entries to the 31 Dec 91 SAR to correct variance categories. Revised estimate reflects current funding. (Estimating)	-18.0	-31.2
Revised estimate to 31 Dec 91 SAR to correct variance categories. Revised estimate is for other costs. (Support)	+18.0	+31.2
Program office estimate for other costs (training, gss, data) revised for current program (Support)	+80.8	+133.5
Initial spares changes in FY93 and out due to revised production schedule (Support)	+17.5	+39.3
Additional funds required for ICS in FY99 and FY00 due to revised production schedule (Support)	+17.9	+31.5
Reestimate of Peculiar Support Equipment (PSE) revised for current program (Support)	-35.2	-55.3
Procurement Subtotal	+218.4	+171.7
(3) MILCON		
Revised inflation indices (Economic)	N/A	-6.8
Adjustment for current and prior year escalation (Estimating)	---	-0.1
Congressional action restored FY93 MILCON funding (Estimating)	+7.5	+10.8
Increase in funding for Main Operating Base due to increase in facilities (Estimating)	+32.9	+51.3
Forward Operating Based changed to Forward Operating Locations (Estimating)	-45.9	-72.9
MILCON Subtotal	-5.5	-17.7

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
571.4	-3.4	-430.2	2.9	95.9	45.7	--	38.7	-250.4	321.0

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
321.0	12.88	14.32	35.36	-19.01	74.31	--	3.18	121.04	442.1

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) JOINT STARS - Basic FSD:	Initial Contract Price		
	Target	Ceiling	Qty
Grumman Aerospace, Melbourne, FL F19628-85-C-0053, FPIF Award: September 27, 1985 Definitized: September 27, 1985	$657.0	$657.0	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$938.4	$960.3	2	$1132.9	$1132.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-269.4	$-59.4
Cumulative Variances To Date (02/28/93)	$-12.3	$-19.6
Net Change	$257.1	$39.8

Explanation of Change:

The EAC, and cost and schedule variances reflect continued hardware, software, and DT&E overruns. Included are claims and Request for Equitable Adjustments, which have been resolved under the FSD settlement of Apr 93.

15. (U) Contract Information (Cont'd):

(U) JSTARS - Follow-on FSD:
Grumman Aerospace, Melbourne, FL
F19628-90-C-0197, CPIF
Award: November 2, 1990
Definitized: October 26, 1992

Initial Contract Price		
Target	Ceiling	Qty
$523.1	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$661.6	N/A	1	$661.6	$661.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$4.6	$-4.6
Cumulative Variances To Date (02/28/93)	$-3.1	$-13.6
Net Change	$-7.7	$-9.0

Explanation of Change:

Cost Variances became unfavorable in October and continued through the current period. The variances are driven by "difficulties" in the refurbishment, advanced tech work stations and system development functions. Similarly, schedule variances continued in the aircraft subsystem, aircraft refurbishment and the advance tech work station. A recovery plan is now in place. Engineering requirements, non-routine discrepancies and concurrence delays were the leading causes of the schedule variance. The corrective action plan includes developing a revised bottom-up Estimate at Completion. This has resulted in a new cost and schedule baseline which will be fully implemented by June 1993.

The new baseline reflects increases in both planning and surveillance oversight by Grumman in order to modify and reduce the schedule and cost variances observed since the previous report.

The increase in Target Price and Contractor's/Program Manager's EAC reflects additional scope, e.g., SCDL Producibility, UHF Mixed Mode, SDS Block 1, etc.

Upon contract definitization, the contractor conducted a bottom-up EAC exercise. Then, in conjunction with performance history since contract inception, the contractor implemented a cost and schedule baseline that reflected the effort to complete the remaining work.

15. (U) Contract Information (Cont'd):

b.(U) Procurement --

(U) LRIP Advance Buy:

Grumman Aerospace, Melbourne, FL
F19628-92-C-0035, FPIF
Award: April 24, 1992
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$129.2	$0.0	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$112.4	$0.0	2	$112.4	$112.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$-0.1	$-0.2
Net Change	$-0.1	$-0.2

Explanation of Change:

The Target Price includes the Basic NTE $107.8 plus $4.6M of miscellaneous spares and Aircraft Directives. The cost and schedule variance are negligible. (Note: The LRIP Lot 1 contract was negotiated on 15 Apr 93 at a Target Price of $415.1M).

This is the first time this contract is being reported.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 60.0% (12 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 34.6% ($2905.3 / $8399.6)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2001)	Total
RDT&E	2131.1	295.2	97.6	1032.5	3556.4
Procurement	744.6	409.0	621.4	2909.9	4684.9
MILCON	29.6	24.4	27.2	77.1	158.3
O&M	-	-	-	-	-
Total	2905.3	728.6	746.2	4019.5	8399.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1982				33.5	32.6	32.6	32.6	7.6
1983				30.7	31.3	31.3	31.2	4.9
1984				38.7	41.0	41.0	41.0	3.8
1985				44.4	48.6	48.6	48.6	3.4
1986				139.3	156.1	156.1	155.0	2.8
1987				256.1	300.2	300.2	297.5	2.7
1988				273.3	330.7	330.7	317.2	3.0
1989				183.7	229.6	229.6	210.8	4.2
1990				70.6	91.8	91.8	87.0	4.0

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1991				161.6	217.7	217.6	145.3	4.3
1992				245.0	338.1	301.0	245.1	2.8
1993				221.8	313.4	191.3	150.7	2.4
1994				204.1	295.2			2.4
1995				66.0	97.6			2.3
1996				61.6	93.1			2.3
1997				92.0	142.3			2.2
1998				166.4	262.9			2.2
1999				70.8	114.2			2.2
2000				127.3	210.0			2.2
2001				124.6	210.0			2.2
Subtot				2611.5	3556.4	1971.8	1762.0	

Obligation and Expenditure rates are as of 14 Apr 93.

Appropriation: 3010 Aircraft Procurement, Air Force

1992				92.3	137.3	129.2	31.3	2.8
1993	2	4.0	334.1	399.0	607.3			2.4
1994	1		200.7	262.7	409.0			2.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1995	2		323.5	390.3	621.4			2.3
1996	3	7.0	370.9	443.1	720.9			2.3
1997	4		367.4	426.2	708.3			2.2
1998	2		250.3	288.1	489.5			2.2
1999	2		233.1	253.0	439.2			2.2
2000	3		178.5	311.0	552.0			2.2
Subtot	19	11.0	2258.5	2865.7	4684.9	129.2	31.3	

Obligation and expenditure rates are as of 14 Apr 93.

Appropriation: 3300 Military Construction, Air Force

1992				13.4	18.8			2.8
1993				7.5	10.8			2.4
1994				16.6	24.4			2.4
1995				18.1	27.2			2.3
1996				4.5	6.9			2.3
1997				29.2	45.9			2.2
1998				15.1	24.3			2.2
Subtot				104.4	158.3			

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3300 Military Construction, Air Force (Cont'd)								
Grand Total	19	11.0	2258.5	5581.6	8399.6	2101.0	1793.3	

Obligation and expenditure rates are as of 14 Apr 93.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		409.0		N/A	N/A
Procurement Qty		1		N/A	N/A
Proc. Unit Cost	N/A	409.000	N/A	N/A	N/A
FY 1995					
Procurement Cost		621.4		N/A	N/A
Procurement Qty		2		N/A	N/A
Proc. Unit Cost	N/A	310.700	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		2909.9		N/A	N/A

Since production is less than six per year, production rate information is not required pursuant to 10 USC Section 2432.

c. (U) Deliveries (Plan/Actual) -- None.

17d. (U) Production Rate Data (Cont'd):

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

O&S costs were based on 19 used Boeing 707 aircraft. The support concept priced assumed Government two level (organizational/depot) support of the prime mission equipment (PME). The airframe support will be Government organizational level support, a mixture of Government and contractor support for intermediate level maintenance, and contractor support for depot level requirements. The O&S costs of the PME and airframe were estimated individually and then added together to estimate the total system level O&S costs. The PME costs were estimated using JPO Developed Repairable Support Division (RSD) Model to calculate the AF Stock Fund Life Cycle Costs. Current AF Policy is to use 11% Forecasted Acquisition Cost (FAC) and 9.83% FAC to calculate the Depot Repair and surcharge, respectively. The airframe costs were estimated by the Government using the Cost-Oriented Resources Estimating (CORE) model contained in AFR 173-13. The planned buy program was used to estimate the actual O&S costs. Significant O&S cost categories include: Personnel, Unit Consumption, Depot Maintenance/Contractor Support, and Sustaining Support/Indirect Support. The source of the data was Program Office Estimate, 23 March 1993. The O&S period for Joint STARS starts with delivery of P1 in FY96 and concludes in FY17 (Ramp Up FY96 through FY02 and Steady State FY03 through FY17).

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Steady State Avg Annual 15 year per year (FY03-FY17)	Avg Annual Cost Per Antecedent
Personnel	89.5	N/A
Unit Consumption	118.6	N/A
Depot Maint/Contr Spt	54.4	N/A
Sustaining/Indirect Spt	71.8	N/A
Total	334.3	N/A

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs — None.

Contractor Support of $47.9M is separately identified and includes CLS for Mission Software Software Support Facility, Mission Crew Training System, Integration Support Facility (ISF) Maintenance Trainers, Flight Simulator, and Aircraft.

There is no antecedent system to Joint STARS; this system is a new capability.

AF-27 SFW

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Sensor Fuzed Weapon

AS OF DATE: December 31, 1992

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AS AMENDED
MAY 11 1993 10
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Sensor Fuzed Weapon (SFW), CBU-97/B

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
ASC OL/YH-1
102 W D Avenue, Suite 168
EGLIN AFB, FL 32542-6807

COL RILEY C. SHELNUTT
Assigned: February 8, 1993
AV 872-5382 COMM (904) 882-5382

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604602F (Shared) Project 643244
PE 0604604F (Shared) Project 643086
PE 0604607F Project 642961
PROCUREMENT:
APPN 3080 ICN 813520 (Air Force) (Shared)

SAF/PAS
93-293 -T

[redacted]

[redacted]

OASD(PA) DFOISR 93-C-449

5. (U) Related Programs:

SUU-64/B Tactical Munitions Dispenser
CNU-411 Container
FZU-39 Proximity Sensor
SEEK EAGLE
Joint Stand-Off Weapon (JSOW)

6. (U) Mission and Description:

The objective of the Sensor Fuzed Weapon (SFW) program is to develop and produce a conventional munition capable of multiple kills per pass against operating armored vehicles, air defense units, and other support vehicles. The SFW does not replace any existing system but will enhance current capabilities. The requirement for SFW is the HQ ACC System Operational Requirements Document (SORD) (TAF 302-78-I/II/III-A (Revision 2), 6 Nov 91). The use of the BLU-108 submunition in the SFW is also planned for a variant of the JSOW.

7. (U) Program Highlights:
a. (U) Significant Historical Developments —

During formulation of the FY85 Program Objective Memorandum, the Air Force segregated the development of conventional submunitions from the development and integration of these submunitions into a weapon system. This decision was made to preclude termination of promising submunition designs in the event of termination of its carrier. The Risk Reduction Phase, the first of two development phases, was successfully completed in Sep 85. In Oct 85, after a successful Preliminary Design Review (PDR), SAF/AL authorized the SFW program to proceed into the Full Scale Development (FSD) phase in Nov 85. The Dec 86 Selected Acquisition Report (SAR) implemented the new Development Estimate Baseline.

The 30 Sep 87 SAR, based on numerous contractor and government tests, revised several of the program milestones. During 1988, a pre-Critical Design Review (CDR) test program was successfully completed allowing Textron Defense Systems (TDS) to begin fabricating hardware for the Development Test and Evaluation (DT&E)/Initial Operational Test and Evaluation (IOT&E) program. Due to test failures, schedule delays, and budget changes, the program was restructured in Jun 89 and CDR was closed out in Aug 89. This restructure included a Production Transition Program (PTP) to reduce cost and the risk of transitioning to production, and was approved by SAF/AQ on 27 Nov 89. The culmination of these events resulted in a greater than six month slip in five major milestones and increased the Production Acquisition Unit Cost (PAUC) by 21 percent. The FY91 President's Budget (PB) incorporated the restructured program as modified and $10M (FY91) was transferred to the Army to support the PTP. DT&E testing began in Dec 88 and was successfully completed 11

7a. (U) Program Highlights (Cont'd):

Apr 91. Twenty of twenty Live Fire tests were successfully completed during DT&E, and SEEK EAGLE (aircraft compatibility) testing began on 13 Apr 90 and was successfully completed. Forty-six weapons were successfully launched during the initial phase of SEEK EAGLE (ballistic and safe separation). The SFW was certified ready for IOT&E by the Program Executive Office (PEO) in Aug 90.

TDS submitted three Request for Equitable Adjustments (REEAs) totaling $60.2M. A $24.8M settlement was reached for the three REEAs. Final payment was sent to TDS on 24 Apr 92. As a result, Textron withdrew all claims associated with the REEAs.

The Office of the Test Directorate (OTD) projectile countermeasure susceptibility test series at Sandia began 17 Jun 91 and was completed 29 Jun 91. Testing indicated no new areas of projectile susceptibility. IOT&E testing was successfully completed on 5 Dec 91 with a ripple launch of four SFWs from an F-16. The IOT&E final test report was published 1 Apr 92 highlighting that the weapon exceeded both kills per pass and reliability requirements. Weapon quantities were reduced from 19,803 to 16,726 due to funding considerations. The Dec 90 SAR reflected the acquisition program strategy consistent with this reduction. The SFW Defense Acquisition Board (DAB) Program Review on Low Rate Initial Production (LRIP) slipped from Sep 91 to Mar 92. This slip occurred because of the desire to have a negotiated LRIP 1 contract prior to the Conventional Systems Committee (CSC) Review. As a result of the DAB process, the program was restructured to include a Producibility Enhancement Program (PEP) which was briefed to the CSC on 3 Mar 92. On 16 Mar 92 the DAB approved the program and authorized LRIP. This program reflected a nine month slip in Initial Operational Capability (IOC) and a reduction in the acquisition objective to 10,000 weapons. The reduction in funding of $493.6M over the FY93-97 period resulted in a Nunn-McCurdy breach. The program documentation, which included the Acquisition Program Baseline (APB), was revised to reflect the Mar 92 DAB Decision.

The LRIP 1 contract for $101.5M to deliver 98 tactical units (which met Congressional Language) and 108 SEEK EAGLE units was awarded to TDS on 31 Mar 92. In addition, a Request for Proposal (RFP) for the PEP Phase 1 effort was released 18 May 92 with contract award in Sep 92. Concurrent with awarding the LRIP 1 contract, the Air Force issued a stop work order on the SEEK EAGLE hardware contract line item. This action was necessary to make funds available for the PEP Phase 1 effort. Subsequent SEEK EAGLE buys will be from SEEK EAGLE funding in the FY94 and out-year budgets.

The PTP successfully completed projectile qualification testing. PTP submunition qualification testing was completed in Nov 92 leading to system level testing and incorporation of the PTP changes into the FY92 LRIP buy.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --

On 3 Sep 92 a RFP for the PEP 2 effort was released. Funding for the PEP 2 effort ($9M in FY93) is being worked through the Unfunded Requirement process. An RFP for LRIP 2 was released 2 Sep 92. The LRIP 2 proposal was received on 19 Oct 92. The FY94 President's Budget reflected a quantity objective of 5,000 weapons, a net decrease of 5,000 weapons from the Dec 91 SAR. Additionally, near term funding was reduced which lowers the ramp up quantity. This 50 percent reduction in quantities and lower ramp rate results in a cost breach. The effects of the Joint Stand-Off Weapon (JSOW) BLU-108 production quantities beginning in FY98 are incorporated in the SFW cost estimate. A revised Acquisition Program Baseline will be submitted reflecting this cost breach.

The effects of the Joint Stand-Off Weapon (JSOW) production quantities beginning in FY98 are incorporated in the SFW cost estimate using the following JSOW BLU-108 quantity profile: FY98 (40), FY99 (135), FY 00 (501), and FY01 and out (750). The estimated savings achieved from PEP 1 and 2 are incorporated in the SFW cost estimate. The PEP 2 effort is currently not funded (approximately $9M). When funds become available, they will be incorporated into the cost estimate.

The program is meeting mission requirements.

c. (U) Changes Since As Of Date --

An additional cut of $42M in FY95-99 further reduced the production ramp quantity. HAVE NOTE testing of the PTP projectile is complete. Testing at the BLU-108 submunition level is ongoing and scheduled for completion late Mar 93. On 25 Jan 93 the LRIP 1 contract was modified to add LRIP 2 for a total of 22 units ($16.5M).

8. (U) Threshold Breaches:
A reduction in quantity to 5,000 weapons (a 50 percent reduction) and additional funding reductions in the FY94 President's Budget (PB) have resulted in another Nunn-McCurdy Program Acquisition Unit Cost (PAUC) breach (20 percent Then Year). These changes breached the Average Procurement Unit Cost (APUC) of the APB. The current APB is dated 17 Apr 90. Schedule breaches to the APB for Milestone III and IOC are also reported. A Program Deviation Report (PDR) and a revised Acquisition Program Baseline will be submitted reflecting these cost and schedule breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Advanced Development Contract Award	JUL 84	N/A	JUL 84
Preliminary Design Review (Risk Reduction Phase Complete)	OCT 85	N/A	OCT 85
Milestone II (SAF/AL)	NOV 85	NOV 85	NOV 85
DT&E Start	N/A	DEC 88	DEC 88
Many-On-Many Test	N/A	JUL 89	JUL 89
Critical Design Review Complete	JUL 87	AUG 89	AUG 89
IOT&E Start	N/A	JUL 90	AUG 90
DAB Program Review	NOV 88	SEP 91	MAR 92
Production Contract Award	DEC 88	DEC 91	MAR 92
Complete DT&E/IOT&E	JUN 89	MAR 92	MAR 92
Lot 2 Contract Award	N/A	DEC 92	JAN 93(Ch-1)
Lot 3 Contract Award	N/A	DEC 93	DEC 93
Milestone III	N/A	SEP 94	DEC 95
Lot 4 Contract Award	N/A	DEC 94	DEC 94
(b)(1) [redacted]			
Program Management Responsibility Transfer (PMRT)	N/A	SEP 98	N/A

b. (U) Previous Change Explanations --

The CDR date was moved from Jul 87 to Oct 87 based on contractor hardware procurement and test delays. It was then slipped from Oct 87 to Mar 88 due to design problems on the Bomb Live Unit (BLU)-108/B structure and verification/validation of design improvements. DT&E/IOT&E completion slipped from Jun 89 to Apr 90 due to the CDR adjustment, the necessity to accommodate a cold weather test environment requirement and nonavailability of DT&E test assets delaying DT&E start. The Program Review (Milestone IIIA) was slipped from Nov 88 to Aug 89 due to the slip in CDR. The subsequent slip from Aug 89 to Mar 90 allowed more of the IOT&E testing to be completed prior to the Program Review. The production contract award milestone was changed from Dec 88 to Dec 90 as a direct result of the slips in CDR and IOT&E. CDR was held Apr 88 with final design approval Aug 89. As a result of two test failures, design changes, schedule delays and budget impacts, the program was restructured. This restructure slipped DT&E/IOT&E completion to Jan 92 and submission of final test reports to Mar 92, DAB Program Review to Sep 91, and Production Contract Award to Dec 91. Due to the FY91 PB impact, the IOC estimate was revised by HQ ACC. IOT&E was delayed until Tactical Munitions Dispenser (TMD) anomalies found in early SEEK EAGLE testing were resolved and a plan for completing the F-16 Operational Flight Plan (OFP) software was finalized, assuring its availability for the more complex missions scheduled later in IOT&E.

9b. (U) Schedule (Cont'd):
Slips in the DAB Program Review, Production Contract Award, Lot 2 and 3 Contract Awards and IOC occurred because of the desire to have a negotiated LRIP 1 contract prior to the CSC Review on 19 Dec 91 and the impact of the FY93 President's Budget. Program Management Responsibility Transfer (PMRT) is no longer applicable since AFSC/AFLC consolidation to AFMC. LRIP 2 and 3 contract awards were realigned to ensure that there would be no production break. The LRIP 1 production ramp quantity of approximately 8-10 weapons per month was planned to be maintained, LRIP 2 (23 units) having a 3 month delivery schedule, and LRIP 3 (175 units) returning to a twelve month delivery schedule. Funding and associated quantities have since been reduced to 22 units for LRIP 2 and to 110 units for LRIP 3 which restricted the LRIP 3 ramp quantity to the LRIP 1 level. The Acquisition Decision Memorandum (ADM) dated 26 Mar 92 directed a four year Low Rate Initial Production (LRIP) program vice the three year LRIP program as originally planned. This resulted in a Milestone III (DAB) change from Dec 94 to Dec 95. As a result of the DAB Program Review, we now have a more refined IOC date.

c. (U) Current Change Explanations --

(Ch-1) Lot 2 contract award date was changed from Apr 93 to Jan 93 due to modification to the LRIP 1 contract versus negotiating a separate contract as well as quicker response and negotiation turn around time.

d. (U) References --

(U) Development Estimate:

OSD/CAIG Briefing, May 86. (Approved by OSD) (Production Estimate based on Competitive Dual Source).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 17 April 1990.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Aircraft Compatability	F-16 A/B/C/D, F-15, F-111 A/D/E/F/G, A-10, NATO A/C A-7, B-52G/H	F-16 A/B/C/D, F-15E, F-111A/D/E/F/G, A-10, USMC/USN A/C, NATO A/C	/ F-16 A/B/C/D, F-15E, F-111 A/D/E/F/G, A-10	F-16 A/B/C/D, F-15E, F-111 A/D/E/F/G, F-4	F-16 A/B/C/D, F-15E, F-111 A/D/E/F/G, A-10, USMC/USN A/C, NATO A/C 1/
Shelf Life In Container (yr)	10	15	/ 10	2/	10 2/
Service Life Out of Container (yr)	1	2	/ 1	1	1 2/
Weight (lb Class Munition)	1000	1000	/ 1000	925	1000
Delivery					
Altitude FT AGL	200	200	/ 200	228	200 3/
Altitude FT MSL	20000	20000	/ 20000	18700	20000 3/
Attitude (degrees)	+45 to -45	+45 to -45	/ +45 to -45	+15 to -45	+45 to -45 (Compatible w/ AC Env)
Airspeed (KCAS)	200 to 650	250 to 700	/ 250 to 650	250 to 648	200 to 650 (Up to Mach 1.4) 3/
Acceleration (Gs)	-.5 to +5	+0.5 to + 5	/ +0.5 to +5	+.5 to +4	+.5 to +5
Targets	4/	N/A		4/	4/
(b)(1) [redacted]					
System Reliability	0.90	0.94	/ 0.89	.83	.89 6/

ACRONYMS:
KCAS: Knots Calibrated Air Speed
TMDs: Tactical Munitions Dispenser

10a. (U) Performance Characteristics (Cont'd):
RRAG: Reinforced Regimental Advanced Guard

1/ Future compatibility with B-52 and NATO aircraft.

2/ Worldwide climatic conditions assumed for shelf and service life. Service life denotes out-of-container time, including multiple aircraft flights.

3/ The employment envelope has the following corners: 1) 600 Ft/250 KCAS, 2) 200 FT/480 KCAS, 3) 200 Ft/650 KCAS, 4) 20,000 Ft/650 KCAS and 5) 20,000 Ft/250 KCAS. The A-10 will drop the SFW at altitudes commensurate with safe escape. Acceleration will be as imposed by aircraft/store/dispenser interface.

4/ Primary: Main battle tanks, armored personnel carriers, and armored artillery.
Secondary: Trucks and other support vehicles.

5/ Average releases of four weapons/pass versus Representative Armored Formation (RAG) target set. Includes mobility, firepower, or catastrophic kill categories. This number represents the average expected performance of all dive and level deliveries for a non-countermeasured environment. System contract specification requirements are for a single baseline delivery condition (level at 200 Ft/500 KCAS).

6/ The SFW has a 0.79 system hardware reliability (HR) requirement based on a conditional probability tree approach. HR will be defined in terms of expected number of projectiles functioning divided by the number of projectiles available to function. HR is a function of the reliability of the following systems which make up the SFW: SUU-66/B TMD, RMU-488/B, BLU-108/B submunition (10 each), and the projectile (40 each). This value will be reflected as the current approved program objective when the APB is approved.

b. (U) Previous Change Explanations --

Airspeed was changed to 200-650 KCAS (threshold) and 200-700 KCAS (goal) per the 11 May 89 SORD. Aircraft compatibility was changed by deleting the F-4 and adding suffix designators for the A-7, F-15, F-16, and F-111. The A-7 and B-52 aircraft requirements were deleted per HQ ACC Msg 131313Z Nov 89 and HQ SAC Msg 291356Z Dec 89. The USMC/USN aircraft elements were added per the 11 May 89 SORD. The System Reliability threshold has changed from 0.90 to 0.94 per ACC message. This value has been included as part of our SORD update. Corrected administrative errors and corrected the expanded Current Estimate description erroneously left out of the Dec 91 SAR.

10c. (U) Performance Characteristics (Cont'd):

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

OSD/CAIG Briefing, May 86. (Approved by OSD) (Production Estimate based on Competitive Dual Source).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 17 April 1990.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	80.0	121.3	135.0
Procurement	1139.8	1543.2	649.9
Flyaway	(1127.7)		(644.3)
Other Weapon Systems	(12.1)		(5.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 79 Base-Year $	1219.8	1664.5	784.9
Escalation	1186.0	2213.9	932.9
Development (RDT&E)	(47.7)	(79.6)	(91.1)
Procurement	(1138.3)	(2134.3)	(841.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2405.8	3878.4	1717.8

Production dollars and quantity reflects the FY94 President's Budget (PB). Production funding does not include an Unfunded Requirement of $9M in FY93 for the Producibility Enhancement Program (PEP) Phase 2. Cost savings for PEP 2 are included in the current program cost estimate. Also not included is $14.5M SEEK EAGLE funding in the FY94 PB as follows: FY94 $2.0M, FY95 $6.0M, and FY96 $6.5M.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd): follows: FY94 $2.0M, FY95 $6.0M, and FY96 $6.5M.

The FY94 President's Budget (PB) reflected a quantity objective of 5,000 weapons, a net decrease of 5,000 weapons (50 percent) from the 31 Dec 91 SAR. Additionally, near term funding was reduced which lowers the ramp up quantity. This 50 percent reduction in quantity and lower ramp rate results in a cost breach. An additional cut of $42M in FY95-99 further reduced the production ramp quantity.

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY79$)	784.9	1175.1	784.9
(2) Unit Cost	0.157	0.118	0.157
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY79$)	8.7	8.9	41.8
Less CY Adv Proc	0.0	0.0	0.0
Plus FY Adv Proc	0.0	0.0	0.0
Net Total	8.7	8.9	41.8
(2) Unit Cost	0.395	0.405	0.380

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.057	19.86
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-5000	-50.00
(4) PAUC (BY79$)	0.039	33.05
(5) CPUC (BY79$)	-0.010	-2.47

f. (U) Changes from the Previous SAR - (JUN 92 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.057	19.86
(2) CPUC (TY$)	0.000	0.00
(3) PAUC Quantity	-5000	-50.00
(4) PAUC (BY79$)	0.039	33.05
(5) CPUC (BY79$)	-0.010	-2.47

g. (U) Initial SAR (JUN 86)
(1) Program Acquisition Cost (TY$) -- 2405.8
(2) Program Acquisition Cost (BY$) -- 1219.8

11b. (U) Total Program Cost and Quantity (Cont'd):

b. (U) Quantity —	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	0	0
Procurement	14000	19803	5000
Total	14000	19803	5000

Note: Excludes 155 RDTE prototypes from the SAR Baseline and 155 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

OSD/CAIG Briefing, May 86. (Approved by OSD) (Production Estimate based on Competitive Dual Source).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 17 April 1990.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1717.8	2865.8	1717.8
(2) Quantity	5000	10000	5000
(3) Unit Cost	0.344	0.287	0.344
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	17.7	17.7	87.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	17.7	17.7	87.5
(2) Quantity	22	22	110
(3) Unit Cost	0.805	0.805	0.795

Production dollars and quantity reflects the FY94 President's Budget (PB). Production funding does not include an Unfunded Requirement of $9M in FY93 for the Producibility Enhancement Program (PEP) Phase 2. Also not included is $14.5M SEEK EAGLE funding in the FY94 PB as

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

h. (U) Unit Cost Changes.

(1) (U) PAUC --

FY94 President's Budget (PB) reflected a quantity objective of 5,000 weapons, a net decrease of 5,000 weapons (50 percent) from the 31 Dec 91 SAR. Additionally, near term funding was reduced which lowers the ramp up quantity. This 50 percent reduction in quantity and lower ramp rate results in a cost breach. An additional cut of $42M in FY95-99 further reduced the production ramp quantity.

(2) (U) CPUC -- None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

None.

j. (U) Program Management and Control.

PROGRAM EXECUTIVE OFFICER:	MGen Stephen M. McElroy, AFPEO/TS
PROGRAM DIRECTOR:	Col Riley C. Shelnutt, ASC OL/YH-1
PROGRAM MANAGER:	Mr James M. Gerkin, ASC OL/YH-1

k. (U) Cost Control Actions.

Reviews of pertinent cost information are performed on a regular basis. The cost/schedule performance status is analyzed and briefed to the Program Director at least monthly in order to monitor contractor cost activity. The Cost Performance Report (CPR) is formally briefed monthly. All significant variances and trends are reviewed for an understanding of their causes and potential effects on the program. Contractor schedules are analyzed weekly and the schedule network reviewed to evaluate program schedule status. A Program Management Review is convened on a monthly basis to ensure that all schedules are up-to-date and assess program progress. Contract Cost Data Reports have begun and each submittal is analyzed and compared to the government program estimate. Additionally, the contractor's submittals of production cost variance reports which forecast the entire program are analyzed and compared to the government program estimate. All variances are discussed at government/contractor Program Management Reviews.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

1. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): Textron Defense Systems
(2) Contract Title: SFW (PTP)
(3) Contract Number:F08635-84-C-0182
(4) Actual Cost of Work Performed (ACWP) to date: 18.5
(5) Percent contract completed (BCWP/target cost): 95.31
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	N/A/0.00%	$-0.8/-4.40%
Previous SAR	$-0.2/-1.23%	$-0.6/-3.12%
Current values	$-0.2/-1.23%	$-0.2/-1.08%
Change from the baseline SAR	$-0.2/-1.23%	$+0.6/+3.32%
Change from the previous SAR	N/A/0.00%	$+0.4/+2.04%

(7) (U) Explanation of Variances. -

This report reflects the correct cost and schedule variances which were erroneously reversed in the 30 Jun 92 SAR.

PTP variances do not impact the program breach.

Change in Cost Variance is due to greater-than-planned efforts in the electronics and cast launcher areas. Adequate contractor Management Reserve exists; therefore, there will be no overrun to the contract.

Change in Schedule Variance is due to recovery of previously reported delays in subcontract deliveries.

NOTE: The Production Transition Program (PTP) program only is being reported in this section. All technical effort on PTP is complete and the Cost Performance Report reflects 95 percent complete and will not be reported in future SARs.

(8) (U) Impact of Variances on Contract. -

None.

(9) (U) Impact of Variances on Unit Costs. -

None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

(U) (1) Contractor(s): Textron Defense Systems
(2) Contract Title: Low Rate Initial Prod
(3) Contract Number:F08626-92-C-0002
(4) Actual Cost of Work Performed (ACWP) to date: 10.2
(5) Percent contract completed (BCWP/target cost): 11.52
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/92	$+0.3/+2.35%	$-0.9/-7.84%
Previous SAR	N/A/0.00%	N/A/0.00%
Current values	$+0.3/+2.35%	$-0.9/-7.84%
Change from the baseline SAR	N/A/0.00%	N/A/0.00%
Change from the previous SAR	$+0.3/+2.35%	$-0.9/-7.84%

(7) (U) Explanation of Variances. -

The Cost Variance is due to the level of effort support required to the Load, Assemble, and Pack (LAP) subcontracting facility being less than planned.

The Schedule Variance is primarily the result of a Textron subsidiary not being required to place a down payment on a special test equipment order. The cost account was established with earned value to be taken at time of initial progress payment of funds. Schedule variance will dissipate upon initial progress payment. Late receipt of parts and late placement of purchase orders also was a contributing factor, but will have no milestone impact.

LRIP variances do not impact the program breach.

(8) (U) Impact of Variances on Contract. -

None.

(9) (U) Impact of Variances on Unit Costs. -

None.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	127.7	2278.1	0.0	2405.8
Previous Changes:				
Economic	-1.7	+167.3	-	+165.6
Quantity	+5.9	-540.4	-	-534.5
Schedule	-	+911.5	-	+911.5
Engineering	-	-	-	-
Estimating	+94.2	-324.9	-	-230.7
Other	-	-	-	-
Support	-	-4.6	-	-4.6
Subtotal	+98.4	+208.9	-	+307.3
Current Changes:				
Economic	+0.8	-176.0	-	-175.2
Quantity	-	-884.6	-	-884.6
Schedule	-	+3.7	-	+3.7
Engineering	-	-	-	-
Estimating	-0.8	+69.7	-	+68.9
Other	-	-	-	-
Support	-	-8.1	-	-8.1
Subtotal	-	-995.3	-	-995.3
Total Changes	+98.4	-786.4	-	-688.0
Current Estimate	226.1	1491.7	-	1717.8

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	80.0	1139.8	0.0	1219.8
Previous Changes:				
Quantity	+3.6	-96.1	-	-92.5
Schedule	-	+96.7	-	+96.7
Engineering	-	-	-	-
Estimating	+52.0	-145.7	-	-93.7
Other	-	-	-	-
Support	-	-3.1	-	-3.1
Subtotal	+55.6	-148.2	-	-92.6
Current Changes:				
Quantity	-	-354.2	-	-354.2
Schedule	-	-15.9	-	-15.9
Engineering	-	-	-	-
Estimating	-0.6	+31.8	-	+31.2
Other	-	-	-	-
Support	-	-3.4	-	-3.4
Subtotal	-0.6	-341.7	-	-342.3
Total Changes	+55.0	-489.9	-	-434.9
Current Estimate	135.0	649.9	-	784.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Quantity: Increased RDT&E units by five for Life Cycle Surveillance Testing and eight units for IOT&E.

Estimating: Offset to quantity increase - reduced management flexibility in executing program; adjustment for prior year escalation; addition of funds in FY87 Appropriations Bill to accelerate SFW program development; adjustment for Air Force assessments - reduced scope of effort to accelerate SFW development; increase for SEEK EAGLE test requirements; increase for Pre-Production Process Verification, additional testing and SPO support

13b. (U) Cost Variance Analysis (Cont'd):

requirements; increase due to RDT&E funds provided for Multi-Staged Improvement Program (MSIP); increase of funds to support ACC in accomplishing the Cost & Operational Effectiveness Assessment (COEA); program assessment (ANSER) and Air Staff Budget Authority adjustment; funds removed in order to support Desert Storm; increase for negotiated Request for Equitable Adjustments (REA); adjustment to equal actual expended dollars.

Procurement

Economic: Revised economic escalation indices; economic adjustment for negative program change.

Quantity: Increased flyaway costs to procure 5,803 additional SFWs in accordance with the revised Program Management Directive (PMD) to incorporate latest assessment of Air Force quantity requirements; total quantities reduced by 3,077 units; procurement objective reduced from 16726 to 10,000 weapons.

Schedule: Impact of revised schedule in accordance with the revised PMD to incorporate latest assessment reflected in FY88-92 Non-nuclear Consumables Annual Analysis (NCAA); first procurement buys scheduled for FY89 changed to FY91; production schedule increased by one year; rephasing of procurement buy schedule; correction to variance categorization in Dec 89 SAR; production extended two years to reach quantity of 10,000 under current budget constraints; PEP program reduced unit cost allowing increased annual quantities within the current President's Budget (PB).

Estimating: New pricing methodology used Risk Reduction Hardware Actuals; competition starts two years earlier; costs savings resulted from a revised Alternate Source Strategy; estimating change associated with 3,077 units since SAR baseline; correction to variance categorization in Dec 89 SAR; current acquisition strategy and the incorporation of production transition reflects a net savings; cost estimate updated to reflect: acquisition strategy change, and incorporation of negotiated LRIP 1 contract; Producibility Enhancement Program (PEP) reduced current flyaway costs.

Support: Increased data costs associated with 5,803 SFWs added to the program; price adjusted based on actuals; decreased data cost associated with the

13b. (U) Cost Variance Analysis (Cont'd):
reduced quantities; decreased data costs associated with reduced hardware costs.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	+0.8
Adjustment for Current & Prior Inflation. (Estimating)	-0.6	-0.8
RDT&E Subtotal	-0.6	--
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-182.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	+6.4
Total Variance associated with decrease of 5000 units.	-370.1	-925.2
Quantity Variance resulting from decrease of 5000 units (50 percent). (Quantity)	-354.2	-884.6
Schedule changes associated with decrease in quantity. (Schedule)	-15.9	-40.6
Change in procurement buy schedule due to slower ramp up quantity. (Schedule)	N/A	+44.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.6	+1.3
Incorporation of LRIP 1 increased subcontract actual cost. (Estimating)	+31.2	+68.4
Adjustment for Current & Prior Inflation. (Support)	N/A	+0.1
Decreased data costs associated with the reduced quantities. (Support)	-3.4	-8.2
Procurement Subtotal	-341.7	-995.3

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	0.171	--	--	0.171	0.172

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.172	-0.002	0.026	0.183	--	-0.032	--	-0.003	0.172	0.344

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) SFW (PTP):

Textron Defense Systems, Wilmington, MA
F08635-84-C-0182, FPIF
Award: March 23, 1991
Definitized: March 23, 1991

Initial Contract Price		
Target	Ceiling	Qty
$20.9	$22.9	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$21.6	$23.7	0	$21.6	$21.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.2	$-0.6
Cumulative Variances To Date (01/03/93)	$-0.2	$-0.2
Net Change	$0.0	$0.4

Explanation of Change:

The change in Current Contract Price and Estimated Price At Completion represents a post-award audit which lowered price by $39K.

This report corrects the Cost and Schedule Variances which were erroneously reversed in the Jun 92 SAR. Therefore, Cost Variance reflects no change. There is no impact to the contract.

15. (U) Contract Information (Cont'd):

The change in Schedule Variance is due to recoveries of previously reported delays in subcontract deliveries. There is no impact to the contract.

NOTE: The Production Transition Program (PTP) contract is 95 percent complete and all technical effort has been completed. Therefore, the PTP contract will not be reported in future SARs. The FSD portion of the contract has been completed.

b.(U) Procurement --

(U) Low Rate Initial Prod:	Initial Contract Price		
	Target	Ceiling	Qty
Textron Defense Systems, Wilmington, MA			
F08626-92-C-0002, FPIF/FPP/CPAF/TM	$101.5	$113.8	98
Award: March 31, 1992			
Definitized: March 31, 1992			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$102.2	$113.3	98	$102.2	$102.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$0.3	$-0.9
Net Change	$0.3	$-0.9

Explanation of Change:

The changes in Current Contract Price and Estimated Price At Completion is due to the termination of SEEK EAGLE and the award of PSP Phase 1 and LRIP 2 being awarded.

The Cost Variance is due to the level of effort support required to the Load, Assemble, and Pack (LAP) subcontracting facility being less than planned. There is no impact to the contract.

The Schedule Variance is primarily the result of a Textron subsidiary not being required to place a down payment on a special test equipment order. The cost account was established with earned value to be taken at time of initial progress payment of funds. Schedule variance will dissipate upon initial progress payment. Late receipt of parts and late placement of purchase orders also was a contributing factor, but will have no milestone or contract impact.

NOTE: The FPIF portion of the LRIP contract is for the 98 weapons, the FPP is for data and warranty, the CPAF is for the Producibility Enhancement Program Phase 1 effort, and the T&M is for the

15. (U) Contract Information (Cont'd):
Environmental Protection Program.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 52.4% (11 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 20.5% ($352.5 / $1717.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2003)	Total
RDT&E	226.1	-	-	-	226.1
Procurement	126.4	87.5	98.8	1179.0	1491.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	352.5	87.5	98.8	1179.0	1717.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1983				2.9	4.2	4.2	4.2	4.9
1984				11.2	16.7	16.7	16.7	3.8
1985				23.1	35.4	35.4	35.4	3.4
1986				15.6	24.6	24.6	24.6	2.8
1987				14.1	23.1	23.1	23.1	2.7

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1988				16.9	28.7	28.7	28.7	3.0
1989				19.3	33.9	33.8	33.8	4.2
1990				14.9	27.1	27.0	26.9	4.0
1991				12.0	22.7	22.5	22.1	4.3
1992				5.0	9.7	9.4	8.4	2.8
Subtot				135.0	226.1	225.4	223.9	
Obligations and expenditures reflect program office records as of 28 Feb 93.								
Appropriation: 3080 Other Procurement, Air Force								
1992	98	7.3	46.3	54.4	108.7	104.2	9.2	2.8
1993	22		8.7	8.7	17.7	17.5	0.3	2.4
1994	110	6.6	35.1	41.8	87.5			2.4
1995	228	1.1	44.8	46.2	98.8			2.3
1996	396	4.9	58.4	63.8	139.4			2.3
1997	434	1.1	58.3	59.9	133.8			2.2
1998	438	0.1	57.6	58.2	132.9			2.2
1999	456	0.5	56.1	57.1	133.3			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
2000	650	5.7	62.9	69.2	165.0			2.2
2001	724	2.2	64.5	67.3	164.1			2.2
2002	724		62.1	62.7	156.2			2.2
2003	720		60.0	60.6	154.3			2.2
Subtot	5000	29.5	614.8	649.9	1491.7	121.7	9.5	
Grand Total	5000	29.5	614.8	784.9	1717.8	347.1	233.4	

Production funding does not include an Unfunded Requirement of $9M in FY93 for the Producibility Enhancement Program (PEP) Phase 2. Also not included is $14.5M SEEK EAGLE funding in the FY94 President's Budget as follows: FY94 $2.0M, FY95 $6.0M, FY96 $6.5M.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is pre-Milestone III and no Full Rate Production Baseline has been established.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		87.5		N/A	N/A
Procurement Qty		110		N/A	N/A
Proc. Unit Cost	N/A	0.795	N/A	N/A	N/A
FY 1995					
Procurement Cost		98.8		N/A	N/A
Procurement Qty		228		N/A	N/A
Proc. Unit Cost	N/A	0.433	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	1179.0		-1179.0	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	155/155
Procurement	0/0

d. (U) Approved Design-to-Cost Objective -- N/A.

- There was no formal DTC objective established for SFW.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The SFW is a no maintenance/wooden round weapon. As such, it will require: no scheduled maintenance; limited unscheduled repairs and stockpile sampling; no shop or operational checkout, testing or test equipment; preload checks and tasks limited to quick visual checks. Field level maintenance activities will be restricted to unscheduled, exterior, on-equipment activities - i.e. corrosion control, desiccant change in the storage container, and lug and lanyard replacement. No special training, support equipment, or personnel are required to maintain the SFW system. The SFW will be compatible with existing munitions handling/loading equipment. All support equipment needed to support the SFW is already in the inventory.

The elements that account for the majority of Operating and Support costs are warranty testing, disposal costs, manpower and

18a. (U) Operating and Support Costs (Cont'd):
second destination transportation. Distributing those costs over five thousand weapons with a ten year shelf life yields a cost of approximately $165 (BY 79$) per weapon per year.

b. (U) Costs --

(FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Annual Cost Per SFW	No Antecedent
Military Personnel	$ 0.033	N/A
Warranty Testing	0.085	N/A
Second Destination Transportation	0.009	N/A
Disposal	0.038	N/A
TOTAL cost per SFW	$ 0.165	N/A

c. (U) Contractor Support Costs -- None.

There is no antecedent system. There are no contractor support costs for this weapon.

92-045

A-14 JAVELIN

**[redacted]*

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Javelin (AAWS-M)

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Javelin (AAWS-M) Advanced Antitank Weapon System - Medium

2. (U) DoD Component: Army

Joint Participants:
USMC

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 28 1993 5

3. (U) Responsible Office and Telephone Number:

Department of Army
PEO - Tactical Missiles
ATTN: SFAE-MSL-AM
RSA, AL 35898-5720

COL Michael A. Roddy
Assigned: February 6,
AV 746-4266 COMM (205) 876-4266

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 63612 Project D308
PE 64611 Project D499

[redacted]

[redacted]

[redacted]

[redacted] OASD(PA) DFOISR 93-S-728

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 1109 ICN 038061 (Navy)
APPN 2032 ICN HO6102 (Army)
APPN 2032 ICN CA0269 (Army)
APPN 2032 ICN HO6300 (Army)

5. (U) Related Programs: None.

6. (U) Mission and Description:
The Javelin (AAWS-M) is a manportable antitank weapon system designed to provide high lethality against advanced armor and is envisioned as a simple-to-operate, easily and economically maintained, rugged and reliable infantry system for the U.S. Army and U.S. Marine Corps (USMC). The Javelin is comprised of two major components: a reusable Command and Launch Unit (CLU) and a missile sealed in a disposable launcher container. The CLU incorporates an integrated day/night sight and provides target engagement capability in adverse weather. The CLU may be used in stand alone mode for battlefield surveillance and target detection. For operation of the system, the round must be mated with the CLU. The CLU will provide a go/no-go status of the CLU and round. The missile, with a warhead designed against both conventional and reactive armor, may be used at the gunner's discretion in top attack or direct fire mode. Top attack is the normal mode of operation and direct fire mode is for engaging targets under cover. The Javelin will replace the DRAGON.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In April 1984, a draft AAWS-M Required Operational Capabilities (ROC) was released to industry for comment. In September 1984, a technology briefing was given to industry and a draft Request for Proposal (RFP) was released for comment. The RFP called for a competitive design validation phase of 27 months followed by a 36-month Full Scale Development (FSD) phase and a Low Rate Initial Production (LRIP) phase. The AAWS-M Army System Acquisition Review Council (ASARC) process was completed on 16 August 1985. The Secretary of the Army Milestone Decision Review I (MDR I) approval memorandum, dated 9 October 1985, authorized the AAWS-M and the AAWS-H entry into the Proof of Principle (POP) phase, subject to Defense System Acquisition Review Council (DSARC) review. On 4 April 1986, a Joint Services Operational Requirement (JSOR) was approved by HQDA and HQMC. The AAWS-M DSARC I was held on 11 April 1986, and the Secretary of Defense Decision Memorandum (SDDM) was issued on 15 May 1986. On 2 May 1986, an AAWS-M RFP for the POP phase was released to industry. Three AAWS-M POP contracts, $30 million each for a period of performance of 27 months, were awarded on 28 August 1986 to Ford Aerospace and Communications Corporation, Hughes Aircraft Company,

7a. (U) Program Highlights (Cont'd):

and Texas Instruments, Incorporated. The FSD/LRIP RFP was released on 6 September 1988, and the proposals were received on 7 November 1988. On 9 February 1989, the Army announced that the Texas Instruments and Martin Marietta Imaging Infrared Fire-&-Forget (IIR F&F) technology was selected for the FSD contract award, contingent upon DA and OSD program approval.

The AAWS-M ASARC II process was completed on 10 March 1989. The Under Secretary of the Army Acquisition Decision Memorandum, dated 17 March 1989, authorized the AAWS-M to proceed into the FSD phase, subject to Defense Acquisition Board (DAB) review. The AAWS-M DAB II review was held on 1 June 1989, and the Secretary of Defense Acquisition Decision Memorandum (ADM) was issued on 19 June 1989 approving entry into the FSD phase with the infrared fire and forget focal plane array technology. Contract award to a Texas Instruments/Martin Marietta Joint Venture was completed on 21 June 1989. An Alternate Warhead Program contract was awarded 25 Oct 89 to Conventional Munitions Systems (CMS), Arlington, VA.

Javelin was selected as the popular name for the AAWS-M weapon system requirements. The Office of Secretary of Defense (OSD) directed Baseline Test Program Plan was approved in April 90. Baseline Test (Phase I) for the seeker/tracker evaluation was completed on 20 Dec 90 and Baseline Test (Phase II) for the operational assessment was completed on 22 Mar 91. The final report for the Baseline Test Program was issued on 3 Jun 91. The Javelin (AAWS-M) All Up Round (AUR) facility located at Redstone Arsenal, AL was opened on 30 Apr 90. A DAB review was held 5 Dec 90 which approved a change to the Program Baseline increasing the system weight threshold to 49.5 pounds. Four of ten Guided Test Vehicle (GTV) flight scenarios were successfully completed between 17 Apr 91 and 30 Sep 91.

As a result of cost growth and technical performance problems, several ASARC, Conventional Systems Committee (CSC), and DAB reviews and briefings were held during 1991. These reviews resulted in a final deskside briefing on 16 Sep 91 to the Defense Acquisition Executive (DAE). An ADM was signed on 27 Sep 91 approving a restructured 54-month Engineering and Manufacturing Development (EMD) phase for the Javelin program.

As a result of a Government review on 8-9 Oct 91 at the Texas Instruments (TI), Dallas, TX facility the decision was made to not fund the seeker Focal Plane Array (FPA) portion of the TI Focal Plane Array Manufacturing (FPAM) facility. Focal plane array deliveries from Hughes Aircraft Co.'s Santa Barbara Research Center (SBRC), who is on contract with Martin Marietta as a second source, were accelerated to meet EMD requirements. The first and second of four OSD directed program milestones were successfully accomplished.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
In Sep 91, an ADM was signed approving restructure to a 54-month Engineering and Manufacturing Development (EMD) phase for the Javelin program. The Defense Acquisition Executive (DAE) signed the new Acquisition Program Baseline (APB) implementing the restructured program on 30 Mar 92. The contract modification restructuring the contract to a 54-month program was signed by the contractor, TI/Martin Javelin Joint Venture, on 31 Jul 92.

SBRC, the primary source for missile FPAs for the EMD phase of the JAVELIN development program, qualified their FPAs through a series of subcomponent tests. The second source selection for the seeker FPAs was announced in Jun 92 as Loral Infared and Imaging Systems, Lexington, Mass. Texas Instruments (TI) continues to produce the Command Launch Unit (CLU) FPAs. The third and forth of four OSD directed program milestones related to FPA cost and development progress were successfully accomplished during FY 92. Deliveries of missile FPAs for EMD by SBRC was completed in Dec 92.

The Deputy Chief of Staff Logistics (DCSLOG) approved the System Support Package (SSP) waiver on 5 Jun 92. This action authorized incorporation of Interim Contractor Support (ICS) into the LRIP contract. Interim contractor support will include 18 months of field level support; 29 months of depot maintenance; and 29 months of supply support.

The Production Proveout Test (PPT) program which consisted of 9 guided test flights was completed (including a successful live warhead shot) with only one flight failing to hit the target. Range safety software functioned properly on that flight and prohibited flight motor ignition after detecting that one fin failed to deploy properly. Five successful Preproduction Qualification Test (PPQT) flight tests were flown as of 31 Dec 92 and all subsystem qualification testing has been completed.

The Justification and Authority (J & A) for Long Lead Time Items (LLTI) and LRIP I was signed by the Army Acquisition Executive (AAE) on 17 Oct 92. Force Development Test and Experimentation (FDT&E) started as scheduled and instructor training was completed on 18 Dec 92. A change in the Javelin Acquisition Strategy from one of having two production sources to one of having a single source (either the Joint Venture or one of the Joint Venture contractors) is being considered.

Javelin (AAWS-M) is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
Six additional, successful PPQT flight tests have been completed with one misfire (for a cumulative total of 11 successful flights in 12 attempts) and FDT&E user training started as scheduled in Feb 93. The OSD approved the release to industry of the RFP for LLTI, first year

7c. (U) Program Highlights (Cont'd):

LRIP hardware and preparation for Interim Contractor Support (ICS). The RFP was reviewed by DoD. The approved RFP was released to the Joint Venture on 16 Mar 93. A new Acquisition Program Baseline was submitted to the USD(A) for approval on 19 April 1993. During the staffing process within OSD, the OSD Cost Analysis Improvement Group expressed concerns that the expected savings from the new acquisition strategy may be overstated. Program costs are currently under review within DoD.

8. (U) Threshold Breaches:
There are procurement cost and average unit procurement cost breaches to the Approved Acquisition Program Baseline (APB) dated 30 Mar 92. On 28 Oct 92 a Program Deviation Report (PDR) was submitted notifying the Program Executive Office (PEO) and the AAE of the cost breach. Submission of the revised APB has been forwarded to the PEO. There is also a Program Acquisition Unit Cost Nunn-McCurdy breach. Specific details regarding this breach are forwarded in an expanded Section 12. The magnitude of this breach may increase, if the Department determines that the cost savings of the new acquisition strategy have been overstated.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Joint Service Op Requirement Approved	APR 86	APR 86	APR 86
Milestone I (DSARC)	MAY 86	MAY 86	MAY 86
Proof of Principle Contract Award	AUG 86	AUG 86	AUG 86
Proof of Principle Complete	DEC 88	DEC 88	DEC 88
Milestone II (DAB)	MAY 89	MAY 89	JUN 89
FSD Contract Award	JUN 89	JUN 89	JUN 89
Pre-Prod Qual Test			
Start	JUN 90	JUN 90	JUN 90
Complete	JAN 92	DEC 93	DEC 93
Training Force Dev Test and Experimentation (FDT&E)			
Start	MAR 91	FEB 93	FEB 93
Complete	AUG 91	APR 93	APR 93
Prototype Delivery	APR 91	NOV 92	NOV 92
IOT&E			
Start	JAN 92	SEP 93	SEP 93
Complete	APR 92	DEC 93	DEC 93
Milestone IIIA (DAB)	JUN 92	APR 94	APR 94

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
LRIP I Contract Award	JUN 92	APR 94	APR 94
LRIP II Contract Award	JUN 93	JUL 95	JAN 95 (Ch-1)
First LRIP Delivery	SEP 93	JUL 95	JUL 95
Prod Qual Test			
Start	SEP 93	AUG 95	AUG 95
Complete	FEB 94	JAN 96	JAN 96
Live Fire Test			
Start	FEB 94	DEC 95	DEC 95
Complete	MAY 94	APR 96	APR 96
First Unit Equipped	FEB 94	APR 96	APR 96
Milestone IIIB (DAB)	JUN 94	APR 96	APR 96
Full Rate Production Contract Award	JUN 94	JUL 96	JUL 96
First Full Rate Production Delivery	JUN 95	JUL 97	JUL 97

(b)(1) [redacted]

Combination of delayed hardware deliveries and delay in obtaining safety certification for man firing of missiles during tests delayed Training FDT&E start and stop dates. IOT&E start defined as start of actual test not start of training of personnel to perform test. IOT&E complete estimate revised by Operational Evaluation Command (OEC). On 27 Sep 91 an Acquisition Decision Memorandum (ADM) was approved which changed the Javelin Engineering and Manufacturing Development (EMD) phase from a 36-month schedule to 54-month schedule.

c. (U) Current Change Explanations --

(Ch-1) Consolidated Long Lead Time Item (LLTI) and Low Rate Initial Production (LRIP) II procurement actions into a single contract. Contract award changed from Jul 95 to Jan 95.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 15 June 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 30 March 1992.

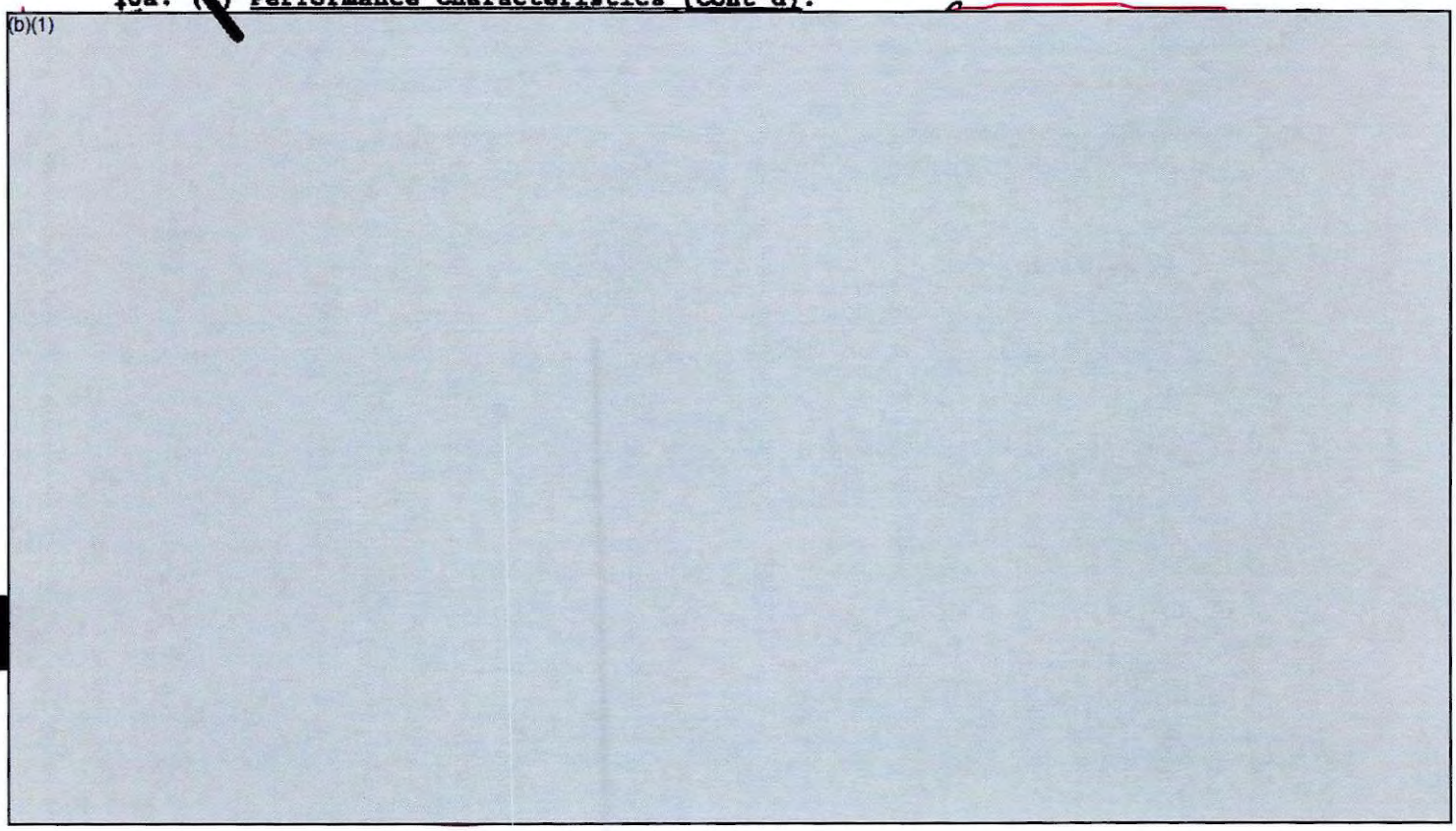
Javelin (AAWS-M), December 31, 1992

10. (U) **Performance Characteristics:**

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

(b)(1)



b. (U) Previous Change Explanations --

As a result of the 5 Dec 90 DAB, a revised APB was approved increasing the system weight threshold to 49.5 pounds.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 15 June 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 30 March 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	549.2	690.2	706.8
Procurement	2849.6	3083.5	3850.9
Round Flyaway	(2447.2)		(2987.6)
CLU Flyaway	(240.3)		(406.5)
Total Flyaway	(2687.5)		(3394.1)
Other Weapon System	(39.0)		(173.6)
Training Devices	(96.7)		(217.5)
Total Other Wpn Sys	(135.7)		(391.1)
Peculiar Support	(0.0)		(21.2)
Initial Spares	(26.4)		(44.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	3398.8	3773.7	4557.7
Escalation	537.7	1424.7	1281.9
Development (RDT&E)	(-1.4)	(33.6)	(25.6)
Procurement	(539.1)	(1391.1)	(1256.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3936.5	5198.4	5839.6

Values shown include USMC program.

b. (U) Quantity --			
Development (RDT&E)	81	N/A	44
Procurement	70550	70550	66485
Total	70631	70550	66529

Note: Excludes 165 RDTE prototypes from the SAR Baseline and 158 from the Current Estimate that are not considered fully configured.

A system is comprised of rounds, CLUs, associated training devices and initial spares with the round the designated end item. Current Estimate value has been revised to exclude 37 RDT&E prototypes that are no longer considered fully configured end items (i.e., test articles containing a functional guidance section, live warhead, etc. which comprise a tactical round).

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

11a. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 15 June 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 30 March 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	5839.6	5129.8	5839.6
(2) Quantity	66529	70620	66529
(3) Unit Cost	0.088	0.073	0.088
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	18.2	18.2	207.3
Less CY Adv Proc	18.2	18.2	0.0
Plus PY Adv Proc	0.0	0.0	18.2
Net Total	0.0	0.0	225.5
(2) Quantity	0	0	1000
(3) Unit Cost	N/A	N/A	0.226

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY90$)	4551.5	3839.6	4551.5
(2) Unit Cost	0.068	0.054	0.068
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY90$)	15.9	15.9	177.0
Less CY Adv Proc	15.9	15.9	0.0
Plus PY Adv Proc	0.0	0.0	15.9
Net Total	0.0	0.0	192.9
(2) Unit Cost	N/A	N/A	0.193

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.015	20.55
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-4091	-5.79
(4) PAUC (BY90$)	0.014	25.93
(5) CPUC (BY90$)	0.000	N/A

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.015	20.55
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-4091	-5.79
(4) PAUC (BY90$)	0.014	25.93
(5) CPUC (BY90$)	0.000	N/A

g. (U) Initial SAR (SEP 89)

(1) Program Acquisition Cost (TY$) -- 3936.5
(2) Program Acquisition Cost (BY$) -- 3398.8

h. (U) Unit Cost Changes.

(1) (U) PAUC --

Cost growth due to weight reduction efforts in the Command Launch Unit (CLU) housing, increased subcontractor costs and system engineering effort in the Engineering and Manufacturing Development (EMD) phase and new contractor Design To Unit Production Cost (DTUPC) estimates incorporating new supplier quotes and higher burden rates (due to the declining Defense business base), addition of Interim Contractor Support (ICS) and increased Depot Maintenance Plant Equipment (DMPE),spares, modifications, and New Equipment Training (NET) estimates.

(2) (U) CPUC --

NA

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

A major cause of the cost breach is the procurement quantity and schedule change. The procurement program has been stretched from 10 to 11 years and the FY 94 to FY 99 quantities have been substantially reduced. The United States Marine Corps (USMC) procurement quantities have decreased from 12,550 to 8,485 rounds (32% decrease) and from

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd): 1,486 to 917 Command Launch Units (CLUs) (38% decease). The USMC has also deferred the start of their procurement from Low Rate Initial Production (LRIP) II to Full Scale Production (FSP).

j. (U) Program Management and Control.

Civilian: Mr. George Williams, Program Executive Officer, Tactical Missiles
Military: COL Michael A. Roddy III, Project Manager, Javelin

Factors such as quantity reductions, schedule stretchouts, new supplier quotes and higher burden rates due to the shrinking Defense business base are not under the direct control of the current Joint Venture management.

k. (U) Cost Control Actions.

The contractor entered into a cost sharing agreement with the Government in which the contractor agreed to pay 50% of the contract overrun between $ 443 M and $ 491 M. The cost area is an integral part of the Program Reviews which are held quarterly.

l. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): TI/Martin Javelin
(2) Contract Title: FSD AAWS-M
(3) Contract Number:DAAH01-89-C-A012
(4) Actual Cost of Work Performed (ACWP) to date: 393.9
(5) Percent contract completed (BCWP/target cost): 77.78
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/89	$-4.6/-18.00%	$-3.0/-10.30%
Previous SAR	N/A/0.00%	N/A/0.00%
Current values	$-10.6/-2.77%	$-5.3/-1.37%
Change from the baseline SAR	$-6.0/+15.23%	$-2.3/+8.93%
Change from the previous SAR	$-10.6/-2.77%	$-5.3/-1.37%

(7) (U) Explanation of Variances. -

The Javelin EMD contract was rebaselined since the last SAR (31 Dec 91); consequently the cost and schedule variances were zeroed out. Currently the cumulative cost and schedule variances as of 31 Dec 92 are $ -10.6 M and $ -5.3 M, respectively. The unfavorable cost variance is due primarily to the Command Launch Unit (CLU) (weight reduction efforts in the housing and dewar detector cooler qualification problems), the warhead section (Magnavox Electronic Safe Arm and Fire [ESAF] contract overrun) and system engineering

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd): (tracker software and simulation). The unfavorable schedule variance is due primarily to the guidance section (hardware build behind schedule) and the CLU (late delivery of basic sight components).

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds.

(U) FSD AAWS-M -- DAAH01-89-C-A012

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	547.8	3388.7	0.0	3936.5
Previous Changes:				
Economic	-0.5	+142.2	-	+141.7
Quantity	-	-	-	-
Schedule	+102.0	+456.8	-	+558.8
Engineering	-1.0	+52.4	-	+51.4
Estimating	+71.5	+66.5	-	+138.0
Other	-	-	-	-
Support	-	+303.4	-	+303.4
Subtotal	+172.0	+1021.3	-	+1193.3
Current Changes:				
Economic	-4.1	-321.5	-	-325.6
Quantity	-	-186.5	-	-186.5
Schedule	-	+84.7	-	+84.7
Engineering	-	-	-	-
Estimating	+16.7	+1005.1	-	+1021.8
Other	-	-	-	-
Support	-	+115.4	-	+115.4
Subtotal	+12.6	+697.2	-	+709.8
Total Changes	+184.6	+1718.5	-	+1903.1
Current Estimate	732.4	5107.2	-	5839.6

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	549.2	2849.6	0.0	3398.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	+97.1	-	-	+97.1
Engineering	-0.9	+41.3	-	+40.4
Estimating	+46.6	+32.6	-	+79.2
Other	-	-	-	-
Support	-	+224.1	-	+224.1
Subtotal	+142.8	+298.0	-	+440.8
Current Changes:				
Quantity	-	-123.5	-	-123.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+14.8	+756.2	-	+771.0
Other	-	-	-	-
Support	-	+70.6	-	+70.6
Subtotal	+14.8	+703.3	-	+718.1
Total Changes	+157.6	+1001.3	-	+1158.9
Current Estimate	706.8	3850.9	-	4557.7

b. (U) Previous Change Explanations --

RDT&E
Economic: revised escalation indices.
Schedule: revised development schedule.
Engineering: revised test plan.
Estimating: current and prior year inflation offset and revision due to technology selection; revised estimate to reflect actual costs; lower subcontractor cost.

Procurement
Economic: revised escalation indicies.
Schedule: revised delivery schedules; restructured program delayed procurement 1 year; revised USMC delivery

13b. (U) Cost Variance Analysis (Cont'd):

schedule.

Engineering: add Built In Test Equipment (BITE) to CLU.

Estimating: revised trainer cost and refined missile cost; revised hardware unit costs; revised subcontractor cost (round, Clu and trainers); correction of SAR variances to reconcile flyaway and support cost.

Support: additional costs due to revised delivery schedule; increased support due to higher hardware costs; correction of SAR variances to reconcile flyaway and support cost; additional support cost due to revised delivery schedule.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indicies. (Economic)	N/A	-4.1
Revised subcontractor estimates. (Estimating)	+14.8	+16.7
RDT&E Subtotal	+14.8	+12.6
(2) Procurement		
Revised economic escalation indicies. (Economic)	N/A	-339.1
Economic adjustment for negative program change. (Economic)	N/A	+17.6
Quantity Variance resulting from decrease of 4065 rounds (USMC). (Quantity)	-123.5	-186.5
Change in procurement buy schedule. (Schedule)	--	+84.7
Adjustment for current and prior inflation. (Estimating)	+0.3	+0.4
Revised subcontractor estimates. (Estimating)	+755.9	+1004.7
Increase in trainer cost, added Interim Congractor Support, higher Depot Maintainence Plant/Equipment cost and higher PM cost. (Support)	+70.6	+115.4
Procurement Subtotal	+703.3	+697.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.056	-0.003	0.001	0.010	0.001	0.017	--	0.006	0.032	0.088

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) FSD AAWS-M:	Initial Contract Price		
	Target	Ceiling	Qty
TI/Martin Javelin, Lewisville, TX DAAH01-89-C-A012, CPIF Award: June 21, 1989 Definitized: June 21, 1989	$169.7	N/A	246

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$443.0	N/A	202	$443.0	$443.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$-10.6	$-5.3
Net Change	$-10.6	$-5.3

Explanation of Change:

Variance Analysis: The Javelin EMD contract was rebaselined since the last SAR (31 Dec 91); consequently the cost and schedule variances at the time of the last SAR were zeroed out. Currently the cumulative cost and schedule variances as of 31 Dec 92 are $ -10.6 M and $ -5.3 M, respectively. The unfavorable cost variance is due primarily to the Command Launch Unit (CLU) (weight reduction efforts in the housing and dewar detector cooler qualification problems), the warhead section (Magnavox Electronic Safe Arm and Fire [ESAF] contract overrun) and system engineering (tracker software and simulation). The unfavorable schedule variance is due primarily to the guidance section (hardware build behind schedule) and the CLU (late delivery of basic sight components).

The quantity represents test articles containing fully functional guidance sections.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 42.1% (8 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 11.6% ($674.5 / $5839.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY86-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2004)	Total
RDT&E	656.3	44.9	31.2	-	732.4
Procurement	18.2	207.3	276.3	4605.4	5107.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	674.5	252.2	307.5	4605.4	5839.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1986				61.8	55.1	55.1	55.1	2.8
1987				45.9	42.0	42.0	42.0	2.7
1988				31.1	29.5	29.5	29.5	3.0
1989				100.2	98.9	98.9	98.4	4.2
1990				133.3	136.7	136.7	136.1	4.0
1991				74.9	79.9	79.8	79.1	4.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1992				108.2	118.3	118.2	116.0	2.8
1993				85.6	95.9	60.2	23.3	2.4
1994				39.2	44.9			2.4
1995				26.6	31.2			2.3
Subtot	44			706.8	732.4	620.4	579.5	

Flyaway costs are not applicable to RDT&E phase. The system is comprised of rounds, CLUs and associated training devices. The round is the designated end item.

Appropriation: 2032 Missile Procurement, Army								
1993				15.9	18.2			2.4
1994	1000	15.4	163.8	177.0	207.3			2.4
1995	2009	14.3	194.1	230.7	276.3			2.3
1996	3828	7.8	287.9	332.2	406.6			2.3
1997	2532	12.5	167.3	214.9	268.8			2.2
1998	2284	16.5	136.4	205.9	263.2			2.2
1999	5280		271.8	318.5	416.2			2.2
2000	8213		380.9	433.7	579.2			2.2
2001	8213		352.3	394.9	539.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
2002	8213		331.7	360.1	502.3			2.2
2003	8213		315.7	342.9	488.8			2.2
2004	8215		311.8	354.3	516.2			2.2
Subtot	58000	66.5	2913.7	3381.0	4482.1			
Army	58044	66.5	2913.7	4087.8	5214.5	620.4	579.5	

System is comprised of rounds, CLUs, associated training devices, and initial spares with the round the designated end item. Total fiscal year flyaway costs are associated with a projected buy of 58000 rounds, 5000 CLUs, and associated training devices. Procurement funds in FY 1993 are for procurement of long lead time items and do not represent complete rounds.

Appropriation: 1109 Procurement, Marine Corps								
1996	236		22.2	23.6	28.9			2.3
1997	559	1.4	41.7	50.9	63.7			2.2
1998	1116	6.6	76.6	92.8	118.7			2.2
1999	1307		75.3	85.7	112.0			2.2
2000	1053		41.1	52.3	69.8			2.2
2001	1053		39.4	43.7	59.7			2.2
2002	1053		37.4	40.7	56.7			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1109 Procurement, Marine Corps (Cont'd)								
2003	1053		35.6	38.1	54.3			2.2
2004	1055		36.6	42.1	61.3			2.2
Subtot	8485	8.0	405.9	469.9	625.1			
Navy	8485	8.0	405.9	469.9	625.1			
Grand Total	66529	74.5	3319.6	4557.7	5839.6	620.4	579.5	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is pre-Milestone III and no full-rate production baseline has been determined.

17b. (U) **Production Rate Data (Cont'd):**

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	207.3	0.0	-207.3	-207.3
Procurement Qty	0	1000	0	-1000	-1000
Proc. Unit Cost	N/A	0.207	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	276.3	0.0	-276.3	-276.3
Procurement Qty	0	2009	0	-2009	-2009
Proc. Unit Cost	N/A	0.138	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	4605.4	0.0	-4605.4	-4605.4

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	46/39
Procurement	0/0

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

The maintenance concept for Javelin will be developed to conform to the existing 4-level (or less) maintenance concept for deployment and support. Unit maintenance of the system will be limited to quick and simple visual inspection, cleaning, self-test using Built In Test (BIT), and replacement of consumables (such as batteries).

Interim Contractor Support (ICS) for supply support and depot level maintenance will be utilized for the first two and one-half years. Total Government organic support capability will be established in 1996. Depot maintenance will consist of complete repair of the CLU's economically repairable circuit cards, and assemblies, and components using the IFTE Commercial Equivalent Equipment (CEE). Missile Depot repair (resulting from surveillance checks) will be performed by the system's prime contractor until a Government Depot repair capability becomes economically feasible. The Javelin training devices will be maintained at field and depot levels via Contractor Logistics Support

18a. (U) Operating and Support Costs (Cont'd):
(CLS) contracts for the life of the system.

Fielding occurs in the 2nd year following procurement. Initial repair parts represents over 27% of the fielding program costs. Sustainment covers 20 (full deployment) years of operation, maintenance, and modification. Military pay and allowances represents over 81% of the sustainment program costs. Sustainment for the antecedent system, DRAGON, covers 33 (full deployment) years of operation, maintenance, and modification.

Personnel costs cover military pay and allowances less costs associated with permanent change of station (PCS). O & S consumables consist of petroleum, oil, and lubricants plus ammunition/missiles (training ammo/missiles and war reserve). Direct depot maintenance consists of civilian labor, material, transportation, sustainment of training devices, system software maintenance, and training devices software maintenance. Sustaining investment includes repair parts (including war reserve), spares (including war reserve), modifications/kits, and software upgrades. Other direct costs include field maintenance civilian labor, system specific replacement training, quarters, maintenance, and utilities. Indirect cost consists of costs of PCS, system project management, DRAGON stockpile reliability, and other O & M and MIPA funded items less training device software maintenance and software upgrades.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Year JAVELIN	Avg Annual Cost Per Year DRAGONII(ANTECEDENT)
PERSONNEL	113.3	113.3
O&S CONSUMABLES	0.0	0.0
DIRECT DEPOT MAINTENANCE	8.9	14.2
SUSTAINING INVESTMENT	4.7	20.9
OTHER DIRECT COST	3.2	9.5
INDIRECT COSTS	13.3	4.7
Total	143.4	162.6

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- None.

AAWS-M System - AAWS-M BCE, validated Aug 1989, 20 Years Sustainment, Army Only, USMC O&S Cost TBD;

Antecedent - DRAGON II Life Cycle Cost Estimate, IAAWS COEA, Oct 1988, 33 Years Sustainment, Army Only, USMC O&S Cost TBD.

N-31 PHALANX

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MK-15 PHALANX CIWS

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
MK 15/Close-In Weapon System (PHALANX CIWS)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

DEPARTMENT OF THE NAVY	CAPT CHARLES P. BINGAY
PEO-SHIP DEFENSE	Assigned: July 30, 1991
PEO(SD)	AV 332-2504 X138
ARLINGTON, VA 22242-5170	COMM (703)602-2504 X138

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604755N
PROCUREMENT:
APPN 1507 ICN 4110 (Navy)
APPN 1611 ICN 4110 (Navy)

No Security Objection to Open Publication AS AMENDED
93-C-0429
MAY 26 1993
Office of the Chief of Naval Operations Dept of the Navy

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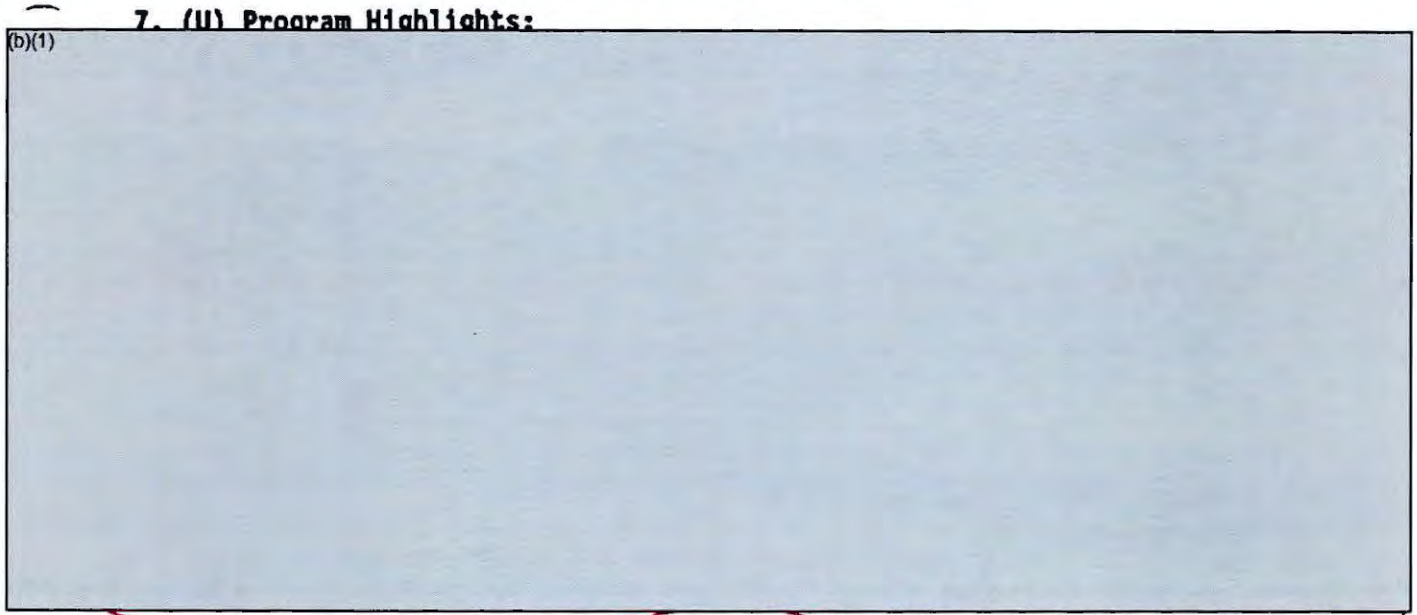
5. (U) Related Programs:
CG-47, LSD-41, LHD, DDG-51, AOE-6 and CVN-68 Classes are SAR reportable related programs.

6. (U) Mission and Description:
CIWS is designed as a fast reaction terminal defense against low and high flying high speed maneuvering anti-ship missiles penetrating outer fleet defenses. CIWS is an automatic self-contained unit consisting of search and track radars, digitized fire control system and a 20 mm M61A1 gun all mounted in a single above deck structure requiring minimum interface with other ship systems. CIWS automatically detects, evaluates, tracks, and engages threats and then returns to search mode ready to detect another target. Its operational sequence is as follows: the search radar detects and evaluates a potential target by comparing measured target parameters (speed and angle of approach) with data stored in the fire control computer. After the target is declared a threat, it is handed over to the track radar. The system begins firing a stream of projectiles timed so that the projectiles arrive in the vicinity of the target when the target reaches an optimum engagement range. Thereafter, the fire control radar compares the incoming target position with the centroid of the stream of projectiles and makes any corrections required to bring it onto the target. This system does not replace an existing major weapon system, but provides a close range self defense capability that is otherwise unavailable to the fleet.

The CIWS program meets its current mission requirements.

7. (U) Program Highlights:

(b)(1)



7a. (b)(1) [redacted]

(b)(1) [redacted]

b. (U) Significant Developments Since Last Report -- The FY 92 contract was awarded to one producer. Competition was between General Dynamics/Pomona (GD/P) and General Electric/Pittsfield (GE/P). Selection was based on the Best Value to the government for FY 92 requirements. In order to maximize the value of this one time competition, evaluation of options for FY 93 and FY 94 were included. During this competition, GD/P was bought by Hughes Missile Systems Company (HMSC). HMSC was awarded the contract on 23 October 1992.

Block I Baseline 2 readiness improvement was completed and has transitioned into production beginning with the FY 90 systems (deliveries began in FY 92). A computational upgrade is on schedule for fleet introduction to support Ship Self Defense System

7b. (U) Program Highlights (Cont'd):

integration. The radar upgrade development has been redefined to support the new Ship Self Defense Program planning and revised requirements reflect integrated system needs.

On October 16, 1992, based on the results of a Cost and Operational Effectiveness Analysis (COEA) and subsequent executive review, the Assistant Secretary of Navy (Research, Development & Acquisition) (ASN(RDA)) directed that the Advanced Minor Caliber Gun System (AMCGS) requirement be fulfilled via an Ordnance Alteration (ORDALT) to the Phalanx Close-In Weapon System to provide a Phalanx Surface Mode (PSM) capability and notified the four congressional defense committees. In a letter dated October 26, 1992, the Chairman of the House Arms Services Committee (HASC) directed that the Navy take no action towards implemention of the proposed PSM until the committee had sufficient time to study the matter, and had provided written authorization. Following the Navy's being advised that all congressional questions concerning this program had been resolved, ASN(RDA) on May 7, 1993, directed that AMCGS/PSM implementation proceed.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are no breaches to the approved Acquisition Program Baseline dated 14 July 1992, and there are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
Start Engineering Dev	DEC 70	DEC 70	DEC 70
Complete At-Sea Test #1 Prototype	MAR 74	MAR 74	MAR 74
Complete At-Sea Operational Test and Evaluation	JUL 77	JUL 77	JUL 77
DSARC III	SEP 77	SEP 77	SEP 77
Initial Operational Capability on CV-66 First Prod. Run	FEB 80	FEB 80	FEB 80
Block I Testing Began	JUN 80	JUN 80	JUN 80
Block I Approval for Limited Production	JAN 84	DEC 85	DEC 85
Commence OPEVAL (BLK I)	MAY 87	DEC 87	APR 88
Block I Approval for Full Production	N/A	JAN 90	JUL 90

b. (U) Previous Change Explanations --

Block I Approval for Limited Production slipped from Jan 84 to Dec 85 due to problem development including excessive Target Motion

9b. (U) Schedule (Cont'd):
Indicators (TMI) and Transmitter Mode Control Unit (TMCU) loss of "Standby go" indication. Corrective action confirmed and tested. OPEVAL (BLK I) slipped from Dec 87 to Apr 88 due to late delivery of Production Suitability Model, establishment of system sensitivity performance in at-sea environment, and lost range availability. BLK I Approval for Full Production was rescheduled from Aug 88 to Jan 90 to accommodate Follow-on OT&E (OT-III).

Block I Approval for Full Rate Production was granted 30 July 1990.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
DCP #88, Rev 1, dated 17 Nov 1977.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 14 July 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
PHALANX CIWS BLOCK 0					
Weight (lbs)	12000	12600	/ 12600	10750	12600
Deck Space (Including space required for operation) (sq ft)	224	224	/ 224	224	224

(b)(1) [redacted]

MK-15 PHALANX CIWS, December 31, 1992

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10b. (U) Performance Characteristics (Cont'd):
includes all system software "drop outs." If the non-tactical system software "drop-outs" were excluded, potential system MTBF would be 188 hours.

An Inherent Availability (AI) = 0.96 was achieved using the observed MTBF of 71 hours; however, using the potential MTBF of 188 hours, the system has potential AI = 0.99.

Prototype system weighed 12,000 pounds. The contractor reduced the weight of the Operational Suitability Model (OSM) to 10,750 pounds. Engineering upgrades since initial delivery have increased the weight to 12,100 pounds.

PHALANX weight specifications increased as a result of manufacturing changes, engineering change proposals, and increase in weight of Outside Purchased Parts (OSP).

PHALANX CIWS BLOCK I:

PHALANX weight specification reflects Block I vice Block 0 system. Block I operational changes occur in reaction time, high stress profile reliability, inherent reliability, acquisition range and fire rate. Reaction times are reported for low and high pulse repetition frequencies (LPRF/HPRF) and vary with elevation angle (above and below 10 degrees). Block I Baseline 1 system has dual fire rate capacity. Also a nominal increase in system reliability is realized. Demonstrated Performance values reflect Block I Baseline 1 testing. Block I improvements in system reliability has improved MTBF from 70 hours to 132 hours.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
DCP #88, Rev 1, dated 17 Nov 1977.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 14 July 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	154.8	365.9	360.8
Procurement	2021.4	2759.1	2495.4
M61A1 GUN/BARREL	(22.5)		(21.8)
WEAPONS GROUP	(1518.0)		(1536.5)
OTHER	(212.8)		(528.6)
Total Sailaway	(1753.3)		(2086.9)
Peculiar Support	(45.3)		(139.8)
Initial Spares	(222.8)		(268.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 84 Base-Year $	2176.2	3125.0	2856.2
Escalation	305.5	15.2	-89.8
Development (RDT&E)	(3.2)	(-78.3)	(-79.4)
Procurement	(302.3)	(93.5)	(-10.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2481.7	3140.2	2766.4
b. (U) Quantity --			
Development (RDT&E)	3	0	3
Procurement	617	734	660
Total	620	734	663

c. (U) Foreign Military Sales/International Cooperative Programs -- Sales to date are as follows: Australia: Qty 7, Cost $36.4M; Greece: Qty 12, Cost $69.7M; Israel: Qty 14, Cost $67.8M Japan: Qty 73, Cost $444.6M; Pakistan: Qty 7, Cost $26.9M; Portugal: Qty 3, cost $29.3M; Saudi Arabia: Qty 16, Cost $119.6M; Taiwan: Qty 16, Cost $108.1M; United Kingdom: Qty 32, Cost $162.8M; and Canada: Qty 4, Cost $16.7M. Total sales are 184 units with total dollar sales of approximately $1,082M.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
DCP #88, Rev 1, dated 17 Nov 1977.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 14 July 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2766.4	3015.7	2766.4
(2) Quantity	663	691	663
(3) Unit Cost	4.173	4.364	4.173
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	54.5	39.7	24.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	54.5	39.7	24.4
(2) Quantity	14	8	6
(3) Unit Cost	3.893	4.963	4.067

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	158.0	2323.7	0.0	2481.7
Previous Changes:				
Economic	-45.1	-304.4	-	-349.5
Quantity	-	+221.5	-	+221.5
Schedule	-	+52.0	-	+52.0
Engineering	-	+188.7	-	+188.7
Estimating	+219.8	+102.9	-	+322.7
Other	-	-	-	-
Support	-	+98.6	-	+98.6
Subtotal	+174.7	+359.3	-	+534.0
Current Changes:				
Economic	-33.0	+44.6	-	+11.6
Quantity	-	-165.3	-	-165.3
Schedule	-	-4.7	-	-4.7
Engineering	-	-11.0	-	-11.0
Estimating	-18.3	-72.2	-	-90.5
Other	-	-	-	-
Support	-	+10.6	-	+10.6
Subtotal	-51.3	-198.0	-	-249.3
Total Changes	+123.4	+161.3	-	+284.7
Current Estimate	281.4	2485.0	-	2766.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	154.8	2021.4	0.0	2176.2
Previous Changes:				
Quantity	-	+195.5	-	+195.5
Schedule	-	+18.7	-	+18.7
Engineering	-	+148.4	-	+148.4
Estimating	+186.3	+162.8	-	+349.1
Other	-	-	-	-
Support	-	+68.5	-	+68.5
Subtotal	+186.3	+593.9	-	+780.2
Current Changes:				
Quantity	-	-79.5	-	-79.5
Schedule	-	-1.4	-	-1.4
Engineering	-	-3.9	-	-3.9
Estimating	+19.7	-107.0	-	-87.3
Other	-	-	-	-
Support	-	+71.9	-	+71.9
Subtotal	+19.7	-119.9	-	-100.2
Total Changes	+206.0	+474.0	-	+680.0
Current Estimate	360.8	2495.4	-	2856.2

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Estimating: Net increase due to Block II requirements and the addition of program years as a continuing program.

Procurement
Economic: Revised escalation indices.
Quantity: Net quantity increase due to addition of production units to the program and the addition of program years to reflect total program requirements.
Schedule: Net increase due to schedule shifts to meet the requirements of the Fleet Modernization Program Overhaul Schedule and addition of program years to

13b. (U) Cost Variance Analysis (Cont'd):
reflect total program requirements.

Engineering: Application of Block I upgrade consisting primarily of high search elevation angle radar and increased magazine capacity to fiscal year 1986 procurement.

Estimating: Increase to estimating due to addition of requirements to reflect total program and contracts allowing revised out year hardware estimates.

Support: Net increase to support due to increased quantities and the addition of program years to reflect total program requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-33.0
Adjustment for Current & Prior Inflation. (Estimating)	+54.8	+28.6
Revised estimates due to cancellation of Block II. (Estimating)	-35.1	-46.9
RDT&E Subtotal	+19.7	-51.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-33.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+78.3
Total Variance associated with decrease of 28 units.	-90.0	-186.6
Quantity Variance resulting from decrease of 28 units. (Quantity)	-79.5	-165.3
Schedule Variance resulting from Quantity Allocation. (Schedule)	-1.4	-7.0
Engineering Variance resulting from Quantity Allocation. (Engineering)	-3.9	-11.0
Estimating Variance resulting from Quantity Allocation. (Estimating)	-5.0	-3.3
Change in procurement buy schedule. (Schedule)	--	+2.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.5
Adjustment for Current & Prior Inflation. (Estimating)	+7.2	+11.3

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Changes due to competitive down select in FY 92 to one source. (Estimating)	-17.6	-28.9
Previously reported as sailaway costs. In error as these costs were not associated with any quantities in 197T and 1977. These costs were related to peculiar support eqiupment. (Estimating)	-91.9	-51.8
Increase to Peculair Support Equipment due to moving previously reported sailaway costs not tied to quantity. (Support)	+91.9	+51.8
Increase in initial spares due to estimating. (Support)	+0.1	+0.1
Adjustment for Current & Prior Inflation. (Support)	+1.4	+2.4
Reduction in initial spares due to decreased quantities. (Support)	-17.9	-36.3
Reduction in support due to decreased quantities. (Support)	-3.6	-7.4
Procurement Subtotal	-119.9	-198.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4.003	-0.510	-0.174	0.071	0.268	0.350	--	0.165	0.170	4.173

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --

(U) FY 89 GE PRODUCTION:	Initial Contract Price Target	Ceiling	Qty
Martin Marietta, Pittsfield, MA N00024-89-C-3130, FFP Award: September 18, 1989 Definitized: September 18, 1989	$34.0	N/A	12

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$139.8	N/A	40	$139.8	$139.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY 89 GD PRODUCTION:
Hughes Missile Systems Co, Pomona, CA
N00024-89-C-3148, FFP
Award: September 29, 1989
Definitized: September 29, 1989

Initial Contract Price		
Target	Ceiling	Qty
$31.5	N/A	13

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$202.8	N/A	50	$202.8	$202.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) FY 92 PRODUCTION:
Hughes Missile System Co, Pomona, CA
N00024-92-C-5426, FFP/FPI
Award: October 23, 1992
Definitized: October 23, 1992

Initial Contract Price		
Target	Ceiling	Qty
$64.3	N/A	15

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$139.6	N/A	26	$139.6	$139.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 74.5% (18 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 93.7% ($2592.9 / $2766.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY77-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	198.9	18.4	13.9	50.2	281.4
Procurement	2394.0	24.4	21.8	44.8	2485.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2592.9	42.8	35.7	95.0	2766.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1978				238.7	123.4	121.0	121.0	6.8
1979				5.3	3.9	3.9	3.9	8.4
1980				2.6	2.1	2.1	2.1	10.6
1981				2.3	2.1	2.1	2.1	10.6
1982				1.5	1.4	1.4	1.4	7.6
1983				1.3	1.3	1.3	1.3	4.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1984				1.2	1.2	1.2	1.2	3.8
1985				3.5	3.7	3.7	3.7	3.4
1986				4.1	4.4	4.4	4.0	2.8
1987				4.9	5.5	5.5	5.5	2.7
1988				6.4	7.4	7.4	6.9	3.0
1989				7.3	8.8	8.8	8.5	4.2
1990				5.1	6.4	6.4	6.3	4.0
1991				4.9	6.3	6.3	6.3	4.3
1992				5.8	7.7	7.7	6.9	2.8
1993				9.8	13.3	8.3	5.8	2.4
1994				13.2	18.4			2.4
1995				9.8	13.9			2.3
1996				4.3	6.3			2.3
1997				9.6	14.3			2.2
1998				9.9	15.1			2.2
1999				9.3	14.5			2.2
Subtot	3			360.8	281.4	191.5	186.9	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy								
197T				48.9	26.8	26.8	26.8	3.6
1977				43.0	25.0	25.0	25.0	3.8
1978	21		106.1	119.2	77.4	77.4	75.9	6.8
1979	19		70.6	88.6	63.4	63.4	61.2	8.7
1980	51		146.4	165.8	130.7	130.7	118.8	11.8
1981	52		155.0	177.1	155.8	155.8	152.5	11.6
1982	49		142.6	174.0	166.2	166.2	161.3	14.3
1983	37		105.3	122.5	123.7	123.7	122.8	9.0
1984	40		116.4	123.9	130.2	125.0	120.5	8.0
1985	36		140.3	145.1	156.9	155.5	153.5	3.4
1986	32		115.5	117.4	131.4	130.3	129.8	2.8
1987	24		78.4	80.6	93.4	91.3	90.9	2.7
1988	5		23.2	24.7	29.8	27.9	27.5	3.0
1989	2		15.1	15.9	19.9	18.7	18.3	4.2
1990	10		38.4	39.0	50.5	48.1	42.6	4.0
1991	11		37.3	37.7	50.1	42.9	32.7	4.3
1992				1.5	2.0	0.5		2.8
Subtot	389		1290.6	1524.9	1433.2	1409.2	1360.1	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1978	16		62.1	76.2	65.5	65.5	65.5	8.2
1979	25		72.4	88.1	77.3	77.3	77.3	9.6
1980	11		28.3	34.5	32.9	32.9	32.9	9.9
1981	16		40.2	49.1	48.3	48.3	48.3	9.6
1982	11		26.6	32.5	32.9	32.9	32.9	7.5
1983	23		57.1	69.0	71.0	71.0	71.0	3.8
1984	19		48.7	59.3	62.1	58.2	56.6	3.6
1985	15		43.7	53.2	56.7	56.6	55.8	2.1
1986	17		51.4	62.7	68.2	65.6	61.3	1.1
1987	12		40.2	48.9	54.3	50.0	43.8	1.5
1988	24		70.9	86.5	98.2	95.4	89.1	2.3
1989	15		51.7	63.0	73.1	70.8	54.4	2.8
1990	15		51.2	62.4	73.9	72.3	69.0	1.3
1991	10		32.5	39.7	48.0	43.9	22.3	1.3
1992	10		29.1	35.5	43.9	13.4	11.8	1.7
1993	14		35.4	43.1	54.5			2.4
1994	6		15.5	18.9	24.4			2.4
1995	4		13.4	16.5	21.8			2.3

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1996								2.3
1997	2		7.2	8.7	12.0			2.2
1998								2.2
1999	6		18.7	22.7	32.8			2.2
Subtot	271		796.3	970.5	1051.8	854.1	792.0	
Grand Total	663		2086.9	2856.2	2766.4	2454.8	2339.0	

Quantities shown for FY 94 and out are remanufactured systems. The last new production systems were procured in FY 93.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

a. Production decision for the 31 Dec 1983 SAR authorized production at varying levels with a maximum annual quantity of 70.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	24.4	24.4	16.9	0.0	-7.5
Procurement Qty	6	6	18	0	+12
Proc. Unit Cost	4.067	4.067	0.939	0.000	-3.128
FY 1995					
Procurement Cost	21.8	21.8	0.0	0.0	-21.8
Procurement Qty	4	4	0	0	-4
Proc. Unit Cost	5.450	5.450	N/A	0.000	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	44.8	0.0	-44.8	-44.8

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	3/3
Procurement	556/556

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The concept of operation is for the weapon system to be capable of engaging enemy targets whenever the ship is deployed. Actual mission profile varies by ship class. The costs are the direct costs to support the primary personnel and to operate the weapon system (excluding base operating support personnel). The depot cost is a summary cost which includes interim contractor support, weapon system overhaul, repair of component parts, modification installation, weapon system inspection and software support. The sustaining investment consists primarily of replenishment spares and repair parts, support equipment replacement, and modification kits for prime equipment and support equipment. The other direct cost category includes cost for installation support nonpay items, such as rents and utilities plus medical supplies. The indirect costs are for permanent change of station and acquisition of program personnel, including personnel retirement. There are no antecedent programs for PHALANX.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost/Syst	Avg Annual Cost/Syst Antecedent
PERSONNEL	51.0	N/A
O&S CONSUMABLES	23.0	N/A
DIRECT DEPOT MAINTENANCE	167.0	N/A
SUSTAINING INVESTMENT	4.0	N/A
OTHER DIRECT COSTS	2.0	N/A
INDIRECT O&S COSTS	15.0	N/A
Total	262.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	8.9	1.5	1.5	6.0	17.9
Industrial Fund	---	---	---	---	---
Total	8.9	1.5	1.5	6.0	17.9

AF-13 FEWS

~~SECRET~~

92-190

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: FEWS

AS OF DATE: December 31, 1992

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1. (U) **Designation and Nomenclature (Preferred Name):**
Follow-on Early Warning System (FEWS)

2. (U) **DoD Component:** USAF

3. (U) **Responsible Office and Telephone Number:**
SMC/MB
185 Discoverer Blvd
Suite 1340
Los Angeles AFB, CA 90245-4695

Col Joseph A. Bailey, Jr.
Assigned: August 3, 1992
AV 833-1808 COMM (310) 363-1808

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 0305905F

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APR 23 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. (U) **Related Programs:**
TITAN IV Launch Vehicle
Defense Support Program (DSP)

[redacted]

SAF/PAS
93-197 -T

OASD(PA) DFOISR 93-C-351

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6. (U) Mission and Description:
The Follow-on Early Warning System (FEWS) program (also known as the Improved Space-Based, Tactical Warning/Attack Assessment, or ISB, TW/AA) will replace the Defense Support Program (DSP). The FEWS system's primary mission is to provide initial warning of a ballistic missile attack on the United States and its allies. The FEWS satellite will incorporate new technologies that will enhance coverage, improve report accuracy, increase probability of detection, accuracy of warning, and report time of Tactical Ballistic Missile(TBM)/Intercontinental Ballistic Missile(ICBM)/and Sea Launched Ballistic Missile(SLBM) launches and improve space-based surveillance. The program consists of three parts: a Space Segment (SS), a Fixed Ground Segment (FGS), and a Survivable Ground Segment (SGS).

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
Follow-on Early Warning System (FEWS) received authority to proceed to the Demonstration/Validation (Dem/Val) Phase in Dec 91 with a successful Milestone I Defense Acquisition Board. Dem/Val contracts were awarded to TRW and Lockheed in Jul 92. In Aug 92, the FEWS Program Office had two successful kick-off meetings with both contractors to discuss the strategies for DEM/VAL.

b. (U) Significant Developments Since Last Report --
This is the initial Selected Acquisition Report for the FEWS program.

The FEWS system is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 18 Jun 92) breaches. Nunn-McCurdy unit cost reporting is not required for this pre-milestone II program, IAW Section 2433, Title 10, USC.

9. (U) Schedule:

a. (U) Milestones --	Planning Estimate	Approved Program	Current Estimate
Milestone I DAB	DEC 91	DEC 91	DEC 91
Authority To Proceed(Contract Award) Dem/Val	JUN 92	JUN 92	JUL 92
DT&E Start	JUN 92	JUN 92	JUL 92
Technology Producibility Assessment Review	JUN 93	JUN 93	JUL 93

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
System Design Review	DEC 93	DEC 93	JAN 94
Final Review	MAR 94	MAR 94	N/A (Ch-1)
Milestone II DAB	MAY 94	MAY 94	JUN 94
Authority To Proceed (Contract Award)	JUL 94	JUL 94	JUL 94
EMD			
Preliminary Design Review Complete	DEC 95	DEC 95	DEC 95
Critical Design Review Complete	MAR 97	MAR 97	MAR 97
IOT&E			
Start	AUG 00	AUG 00	AUG 00
Complete	OCT 03	OCT 03	OCT 03

(b)(1) [redacted]

b. (U) Previous Change Explanations -- This is the initial SAR.

c. (U) Current Change Explanations --

(Ch-1) Due to $10 million reduction in each contract, Final Review has been deleted to make up a portion of the decrement to funding program.

d. (U) References --

(U) Planning Estimate:
Acquisition Decision Memorandum (ADM) dated 19 Dec 91, subject: Authority for Milestone I and APB dated 18 Jun 92.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 18 June 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate

(b)(1) [redacted]

10a. (U) Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations -- This is the initial SAR.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:
Acquisition Decision Memorandum (ADM) dated 19 Dec 91, subject: Authority for Milestone I and APB dated 18 Jun 92.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 18 June 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	5114.0	5114.0	5177.4
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	5114.0	5114.0	5177.4
Escalation	1531.0	1531.0	1013.5
Development (RDT&E)	(1531.0)	(1531.0)	(1013.5)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6645.0	6645.0	6190.9

The 3 RDT&E Units are considered fully configured.

11b. (U) Total Program Cost and Quantity (Cont'd):

b. (U) Quantity —	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	3	3	3
Procurement	0	N/A	0
Total	3	3	3

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:
Acquisition Decision Memorandum (ADM) dated 19 Dec 91, subject: Authority for Milestone I and APB dated 18 Jun 92.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 18 June 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	6645.0	0.0	0.0	6645.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-548.5	-	-	-548.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+94.4	-	-	+94.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-454.1	-	-	-454.1
Total Changes	-454.1	-	-	-454.1
Current Estimate	6190.9	-	-	6190.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	5114.0	0.0	0.0	5114.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+63.4	-	-	+63.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+63.4	-	-	+63.4
Total Changes	+63.4	-	-	+63.4
Current Estimate	5177.4	-	-	5177.4

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-548.5
Adjustment for Current & Prior Year Inflation. (Estimating)	+9.2	+9.8

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Reprogramming for a general reduction of three percent resulted in deleting Final Review from Dem/Val contracts (Estimating)	-18.1	-20.4
Reprogramming and reduction of funds from FY92/93 to FY94 (Estimating)	-31.1	-32.2
Decrease in program for Small Business Innovative Research (SBIR), Travel costs, and contractor support (Estimating)	-105.2	-124.0
Refinement of program estimate (Estimating)	+208.6	+261.2
RDT&E Subtotal	+63.4	-454.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E —

(U) Satellite Dem/Val:

	Initial Contract Price Target	Ceiling	Qty
TRW, INC., Redondo Beach, CA F04701-92-C-0042, CPFF Award: July 21, 1992 Definitized: July 21, 1992	$240.0	$240.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$240.0	$240.0	0	$240.0	$240.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$0.2	$-1.2
Net Change	$0.2	$-1.2

Explanation of Change:

A rebaseline was accomplished as a result of a $10M FY93 reduction; therefore, most variances were eliminated.

15. (U) Contract Information (Cont'd):

The variances that are shown are primarily driven by two areas: focal plane assembly and optics. These areas were also areas of concern before the re-baseline and shall continue to be so in the future. As such, we will closely monitor their progress and focus attention on their progress.

(U) Satellite Dem/Val:	Initial Contract Price Target	Ceiling	Qty
Lockheed, Sunnyvale, CA F04701-92-C-0041, CPFF Award: July 21, 1992 Definitized: July 21, 1992	$240.0	$240.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$240.0	$240.0	0	$240.0	$240.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$-2.8	$-5.0
Net Change	$-2.8	$-5.0

Explanation of Change:

LMSC's most recent CPR submittal includes a re-plan to reduce the contract budget by $10M in FY93. Unlike TRW, LMSC was able to accomplish the planned reduction without a re-baseline. The variances they are currently reporting are good indicators of program performance.

The primary elements driving the current variances are: Payload 1 Integration, Assembly Test and Checkout, Telescope subsystem, LDS subsystem, FPA subsystem, end-to-end ground demo, mockups, technical data and systems engineering. LMSC's schedule variance has been steadily improving. Cost variance is stable.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 16.7% (2 yrs/12 yrs)

(2) Percent Program Cost Appropriated: 5.1% ($313.1 / $6190.9)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2003)	Total
RDT&E	313.1	214.8	343.4	5319.6	6190.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	313.1	214.8	343.4	5319.6	6190.9

c. (U) Annual Summary --

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
1992				73.1	76.5	75.9	65.5	2.8
1993				220.9	236.6	132.4	20.5	2.4
1994				196.0	214.8			2.4
1995				306.3	343.4			2.3
1996				724.0	829.7			2.3
1997				788.3	923.9			2.2
1998				840.9	1006.5			2.2
1999				521.7	638.5			2.2
2000				670.7	839.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
2001				440.5	563.0			2.2
2002				284.1	371.0			2.2
2003				110.9	148.0			2.2
Subtot	3			5177.4	6190.9	208.3	86.0	
Grand Total	3			5177.4	6190.9	208.3	86.0	

FY91 funding of $185M has been omitted because these funds were for the Boost Surveillance and Tracking System (BSTS) program office.

Expenditures and Obligations reflect program office records as of 26 Mar 93.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is Pre-Milestone II, and no full rate production has been determined.

b. (U) Not applicable for Pre-Milestone II programs.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Not applicable for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

AF-16 JDAM

UNCLASSIFIED

*** UNCLASSIFIED ***

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JDAM

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION

MAY 4 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. **Designation and Nomenclature (Preferred Name):**
Joint Direct Attack Munition (JDAM)

2. **DoD Component:** USAF

Joint Participants:
USAF, NAVY

3. **Responsible Office and Telephone Number:**

ASC/YH-2
Air-to-Surface Weapons SPO
Eglin AFB, FL 32542-6807

GM-15 TERRY LITTLE
Assigned: January 6, 1992
AV 872-3525 COMM 904-882-3525

Mr. Little is the program manager for JDAM 1. Major Greg Teman (ASC/YHR) is the program manager for JDAM 3.

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604618F (Shared) JDAM 1 & 3

PE 0604618N (Shared) JDAM 1 & JPF

PROCUREMENT:
APPN 3020 ICN N/A (Air Force) (Shared) AGM-130

SAF/PAS
93-295 -T

OASD(PA) DFOISR 93-S-447

5. Related Programs:
JDAM 2
Joint Standoff Weapon (JSOW)
B-1B
B-2
F-15E
F/A-18 C/D
A-6E
F-16 C/D
B-52H
F-111F
F-117
F-14D
F/A-18 E/F

6. Mission and Description:
Desert Storm emphasized the need for a weapon that can be delivered accurately in all types of weather and battlefield conditions without exposing the delivery or designated aircraft to excessive risk from enemy defenses. Failure to remedy this condition will allow the enemy to continue to take advantage of the sanctuary of weather and/or prevent US air power from prosecuting the war on its own terms. Mission requirements were documented in the Mission Need Statement (MNS) for an Adverse Weather Precision Strike Capability, JROCM-015-092 dated 15 Mar 92. The Joint Operational Requirements Document (Joint Ord), validated in April 1993, further refines the JDAM requirements. The JDAM program is comprised of three inter-related parts to provide munition systems to satisfy these requirements. The Air Force is the executive service with the Navy in a support role. JDAM 1 will develop an inertial navigation system/global positioning system (INS/GPS) aided guidance kit and airfoil group for application on current inventory 2000 pound and 1000 pound warheads. The program may attempt to develop some degree of commonality between the JDAM INS/GPS unit and the INS/GPS unit under development for the Joint Standoff Weapon System (JSOW) managed by the Navy. The JDAM 2 program, funded by PE 0604602F (Armament/Ordnance Development), will develop a multiple arm time and a multiple delay time fuze with cockpit selectability for general purpose and penetrator warheads called Joint Programmable Fuze (JPF). It will also develop a proximity sensor compatible with the FMU-139 and the JPF, and an advanced all-up-round (AUR) 500 pound bomb un-guided meeting insensitive munitions requirements. JDAM 2 has been delegated to the AFAE as an ACAT-2 program and will not be reported in this Selected Acquisition Report (SAR). JDAM 3 is an evolutionary acquisition program. JDAM 3 is an Air Force led program to improve the accuracy of the JDAM 1 developed weapon. The JDAM 3 Concept Exploration will evaluate both seeker and non-seeker options to obtain a precision capability.

7. Program Highlights:

a. Significant Historical Developments --

A Milestone 0 Defense Acquisition Board (DAB) met on 8 Jun 92. The DAB approved the MNS, directed planning for JDAM 1 to be oriented towards a Milestone I/II DAB review in 93 (currently planned for July/August 93), and directed JDAM 3 planning for Milestone I (present estimate is FY94) to proceed in parallel with the Science and Technology Precision Strike Thrust Area plans. The Air Force has since obtained OSD approval to seek a modified MS I for JDAM-1 in lieu of the Milestone I/II.

b. Significant Developments Since Last Report --

This is the initial, Pre-Milestone II, SAR.

The JDAM system is expected to satisfy the mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There is currently no approved Acquisition Program Baseline (APB). Nunn-McCurdy unit cost reporting is not required for Pre-Milestone II programs.

9. Schedule:

a. Milestones --

	Planning Estimate	Approved Program	Current Estimate
JDAM 1 and 3 Milestone 0 DAB	JUN 92	N/A	JUN 92
JDAM 1 Milestone I DAB	JUL 93	N/A	JUL 93
JDAM 1 Contract Award	NOV 93	N/A	NOV 93
JDAM 1 Milestone II DAB	JUN 95	N/A	JUN 95
JDAM 1 Milestone III DAB	APR 99	N/A	APR 99

b. Previous Change Explanations --

There are no previous changes since this is the initial report.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY94 President's Budget dated 8 Apr 93.

Approved Program: None.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
JDAM 1 Accuracy (CEP) Horizontal Targets >60 degrees impact angle (Meters)	13	N/A	/ N/A	N/A	13
JDAM 1 Weather Capability	Adverse	N/A	/ N/A	N/A	Adverse
In-Flight Re-targeting (captive carriage)	Yes	N/A	/ N/A	N/A	Yes
Carrier Operability	Yes	N/A	/ N/A	N/A	Yes
Warhead Compatibility					
MK-84	Yes	N/A	/ N/A	N/A	Yes
BLU-109	Yes	N/A	/ N/A	N/A	Yes
MK-83	Yes	N/A	/ N/A	N/A	Yes
Aircraft Compatiblity (Required Loadout)					
Air Force					
B-1B(16)	Yes (16)	N/A	/ N/A	N/A	Yes (16)
B-2(16)	Plannned	N/A	/ N/A	N/A	Planned
Navy					
F/A-18C/D(4)	Yes (4)	N/A	/ N/A	N/A	Yes (4)
JDAM 3 Accuracy (CEP) (Meters)	3	N/A	/ N/A	N/A	3
JDAM 3 Weather Capability	Adverse	N/A	/ N/A	N/A	Adverse
JDAM 3 Warhead Compatibility					
MK-84	Yes	N/A	/ N/A	N/A	Yes
BLU-109	Yes	N/A	/ N/A	N/A	Yes

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
Joint Requirements Operational Capability (JROC) document for JDAM dated 11 March 1993.

Approved Program: None.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

	Planning Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	626.7	0.0	626.7
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 93 Base-Year $	626.7	0.0	626.7
Escalation	61.1	0.0	61.1
Development (RDT&E)	(61.1)	(0.0)	(61.1)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	687.8	0.0	687.8

JDAM acquisition program baseline has not been approved by DOD Acquisition Executive; the program is subject to change.

RDT&E costs reflect JDAM-1 and JDAM-3.

Current estimate column represents cumulative funding and quantities through FY99. Total program funding and quantities are TBD.

b. Quantity --			
Development (RDT&E)	97	N/A	97
Procurement	0	N/A	0
Total	97	N/A	97

Excludes 57 R&D prototypes from the SAR baseline and the CE that are not fully configured end items.

c. Foreign Military Sales/International Cooperative Programs -- None

d. Nuclear Costs -- None

e. References --

Planning Estimate:
FY94 President's Budget dated 8 Apr 93.

Approved Program: None.

12. Program Acquisition/Current Procurement Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	687.8	0.0	0.0	687.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	687.8	-	-	687.8

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	626.7	0.0	0.0	626.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	626.7	-	-	626.7

This is an initial SAR.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. Contract Information:

Two JDAM-1 competitive development and manufacturing processes contracts are expected to be awarded in November 1993.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 14.3% (1 yrs/7 yrs)

(2) Percent Program Cost Appropriated: 3.3% ($22.6 / $687.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	22.6	87.8	124.0	453.4	687.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	22.6	87.8	124.0	453.4	687.8

The Navy JDAM RDT&E and Weapons Procurement funding lines have not been determined as of 2 Apr 93.

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1993				22.2	22.6	5.7	0.3	2.4
1994				84.3	87.8			2.4
1995				116.4	124.0			2.3
1996				120.6	131.3			2.3
1997				94.4	105.1			2.2
1998				94.5	107.4			2.2
1999				94.3	109.6			2.2
Subtot	97			626.7	687.8	5.7	0.3	
Grand Total	97			626.7	687.8	5.7	0.3	

JDAM-1 acquisition program baseline has not been approved by DoD Acquisition Executive; the program is subject to change.

17. Production Rate Data:

a. Production Baseline Rate

This program is Pre-Milestone II and no full rate production program has been determined.

b. Not applicable for Pre-Milestone II programs.

c. Deliveries (Plan/Actual) -- None.

17c. Production Rate Data (Cont'd):
Not applicable for Pre-Milestone II program.

d. Not applicable for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

N-42 UHF FOLLOW-ON

92-0728

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: UHF FOLLOW-ON

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
UHF Follow-on Communications Satellite System

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
PEO for Space, Comms & Sensors
Communications Satellite Program
2451 Crystal Drive
Arlington, VA 22245-5200

Mr. William R. Coffman
Assigned: February 1, 1988
AV 332-2879 COMM (703)-602-2879

4. Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 1507 ICN 30243000 (Navy) (Shared)

No Security Objection
to Open Publication
~~(AS AMENDED)~~
93-0437
MAY 26 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

5. Related Programs:
None.

6. Mission and Description:
The existing constellation of Ultra High Frequency (UHF) communication satellites provides key command and control links for mobile forces of the DoD and other Government Agencies. As Executive Agent, the Navy is charged with maintaining the continuity of the space segment. The UHF Follow-On Program will provide for a new generation of communication satellites to replenish the existing constellation commencing in the early 1990's.

93 704-

7. Program Highlights:

a. Significant Historical Developments --

Due to the urgent need to satisfy DoD communication requirements, the Secretary of Defense designated the UHF Follow-On Program a major acquisition program in May 1988.

A Defense Acquisition Board (DAB) Milestone IIIA decision was made on July 22, 1988 authorizing the program to enter production. After full and open competition, a firm fixed priced contract was awarded to Hughes Aircraft Company on July 29, 1988. Congress approved a multiyear procurement of this system in the FY89 Defense Authorization Act.

The Navy's Operational Test and Evaluation Force conducted an early operational assessment concluding that the UHF Follow-On satellite system is potentially operationally effective and suitable.

As a result of a DAB program review held on May 25, 1990, the decision to proceed with the UHF Follow-On production was reaffirmed. Additionally, approval was given to add a limited Extremely High Frequency (EHF) capability pursuant to requirements promulgated by the JCS beginning with the fourth launched satellite.

The current acquisition baseline incorporating the EHF capability was signed by the Defense Acquisition Executive (DAE) on October 9, 1990.

b. Significant Developments Since Last Report --

The performance of the current constellation of FLTSAT's and LEASAT's continues to deteriorate. LEASAT #1 failed completely in August 1992. This failure, combined with the failures of LEASAT #3 and FLTSAT #3 reported in the previous SAR, demonstrates that satellites can fail without warning and points out the necessity of maintaining a stable UFO schedule to ensure that the minimum JCS constellation requirements are met.

Currently there are eight UFO satellites in production and authorization has been given for commercial expendable launch vehicle (ELV) services for all satellites.

Satellite #1 was launched on 25 March 1993. However, less than expected performance of the launch vehicle left the satellite in an orbit that prevented the spacecraft from achieving the required geosynchronous orbit. After an examination of technical and operational considerations a determination has been made that the satellite is operationally unusable. After limited functional checks to provide increased confidence in future missions, the remaining fuel will be used to position the satellite beyond geosynchronous altitude. Such an orbit will prevent this satellite from becoming a hazard to other spacecraft.

7b. Program Highlights (Cont'd):

Significant progress is being made toward integration and testing of the second UFO satellite (F2). The best estimate for the launch of F2 is October 1993 at this time, with IOC achieved by December 1993. This schedule may be delayed if further investigation of the failure review of F1 warrants such action.

Even with the successful launch of the remaining satellites, the program will still be one satellite shy of meeting the JCS requirement of nine satellites on orbit.

c. Changes Since As Of Date -- See section 7b. above.

8. Threshold Breaches:
There is currently an Acquisition Program Baseline (APB) (dated October 9, 1990) schedule breach. There will be a schedule slip of more than 6 months due to the late launch and ultimate launch failure of the first UFO satellite (F1). A Program Deviation Report (PDR) dated 21 May 1993 addresses the impact that the failure of F1 will have on the program's schedule. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Production Estimate	Approved Program	Current Estimate
Designation as a Major Defense Acquisition Program	MAY 88	N/A	MAY 88
Milestone IIIA (DAB)	JUL 88	JUL 88	JUL 88
Contract award	JUL 88	JUL 88	JUL 88
System Requirement Review (SRR)	OCT 88	OCT 88	OCT 88
Product Acceptance Test & Evaluation (PAT&E)-G (Start Grond Testing)	NOV 88	NOV 88	NOV 88
Preliminary Design Review (PDR)	APR 89	APR 89	APR 89
Critical Design Review (CDR)	MAR 90	MAR 90	MAR 90
DAB Program Review	MAY 90	MAY 90	MAY 90
PAT&E-I (Start in-orbit testing)	SEP 92	SEP 92	OCT 93(Ch-1)
OT-III	OCT 92	OCT 92	APR 94(Ch-1)
IOC	DEC 92	DEC 92	DEC 93(Ch-1)
OT-IV (Satellite No. 4 w/EHF)	FEB 95	FEB 95	FEB 95
IOC (Satellite No. 4 w/EHF)	TBD	TBD	MAY 95

b. Previous Change Explanations --

The production estimate was adjusted to reflect the program as stated in the Acquisition Program Baseline dated October 9, 1990.

9c. Schedule (Cont'd):

c. Current Change Explanations --

(Ch 1) Due to the failure of satellite F1 to reach the required orbit, the JCS objective for UHF IOC by December 1992 was not obtained. Integration and testing of satellite F2 is progressing well and launch is expected in October 1993, with IOC by December 1993.

d. References --

Production Estimate:
Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:
DAE Approved Acquisition Program Baseline dated 09 October 1990.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Launch capability	Dual Launch Compatible	Dual launch compatible	/ Expendable launch vehicle	N/A	Expendable launch vehicle
Nuclear Hardening	Comply with SM-416-84 levels	Comply with SM-416-84 levels	/ Comply with SM-416-84 levels	N/A	Comply with SM-416-84 levels
Anti-jam uplink channel capacity for fleet broadcast (per satellite)	3	3	/ 1	N/A	3
Effective Isotropic Radiated Power (EIRP) and capacity for UHF channels:					
25 KHz channels w/28 dBW (channels)	3	3	/ 2	N/A	3
25 KHz channels w/26 dBW (channels)	15	15	/ 14	N/A	15
5 KHz channels w/20 dBW (channels)	21	21	/ 20	N/A	21

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
UHF Interoperability	Compatible with all existing UHF terminals except frequency hoppers	Compatible with all existing UHF terminals except frequency hoppers	/ Compatible with all existing UHF terminals except frequency hoppers	N/A	Compatible with all existing UHF terminals except frequency hoppers
EHF Requirements (for satellites 4-9)					
EHF Crossbanding	EHF uplink may be downlinked ion SHF, (20 GHZ) UHF, or both	EHF uplink may be downlinked on SHF (20 GHz), UHF, or both	/ EHF uplink may be downlinked on SHF (20 GHz), UHF or both	N/A	EHF uplink may be downlinked on SHF (20 GHZ) UHF, or both
EHF interoperability	Compatible with Milstar terminals and MIL-STD-1582	Compatible with Milstar terminals and MIL-STD-1582	/ Compatible with Milstar terminals and MIL-STD-1582	N/A	Compatible with Milstar terminals and MIL-STD-1582
EHF EIRP for Earth coverage antenna (dBW)	27	27	/ 27	N/A	27
EHF EIRP for 5 degree steerable spot beam antenna (dBW within 2.5 degree of boresight)	37	37	/ 37	N/A	37
EHF Capability Communication Channels	7	N/A 7	/ N/A / 7	N/A	7

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Telemetry & Command Channel	1	1	/ 1	N/A	1
Broadcast uplink Channels	3	3	/ 3	N/A	3
System Availability (%)	95	95	/ 90	N/A	95
Mean mission duration					
Years	10	10	/ 10	N/A	10
Years Design Life	14	14	/ 14	N/A	14
Fuel Quantity					
Years station keeping	14	14	/ 14	N/A	14
15 degree/day move	1	1	/ 1	N/A	1
Cryptographically secure command & telemetry links	Successful command execution & telemetry reception using NSA approved devices	Successful command execution & telemetry reception using NSA approved devices	/ Successful command execution & telemetry reception using NSA approved devices	N/A	Successful command execution & telemetry reception using NSA approved devices
Anti-jam broadcast and command	DIA Validate NTIC threat level (Classified)	DIA validate NTIC threat level (classified)	/ DIA valdtd NTIC threat level (classified)	N/A	DIA validate NTIC threat level (classfied)
Autonomy (Up to one month): Probability of reacquisition (%)	95	95	/ 90	N/A	95
Frequency Plan	As required by MJCS 68-88	As required by MJCS 68-88	/ MJCS 68-88	N/A	As required by MJCS 68-88

10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations --

"Launch capability" and "EHF capability" were added as baseline characteristics.

c. Current Change Explanations -- N/A

d. References --

Production Estimate:
Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:
DAE Approved Acquisition Program Baseline dated 09 October 1990.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	1479.1	1526.4	1437.2
Flyaway	(1479.1)		(1437.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	1479.1	1526.4	1437.2
Escalation	237.0	318.9	271.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(237.0)	(318.9)	(271.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1716.1	1845.3	1708.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	10	10	9
Total	10	10	9

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

11e. Total Program Cost and Quantity (Cont'd):

e. References --

Production Estimate:
Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:
DAE Approved Acquisition Program Baseline dated 09 October 1990.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1708.6	1824.4	1708.6
(2) Quantity	9	10	9
(3) Unit Cost	189.84	182.44	189.84
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	247.4	247.4	159.8
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	247.4	247.4	159.8
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	1716.1	0.0	1716.1
Previous Changes:				
Economic	-	+53.8	-	+53.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+54.5	-	+54.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+108.3	-	+108.3
Current Changes:				
Economic	-	-30.6	-	-30.6
Quantity	-	-113.2	-	-113.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+28.0	-	+28.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-115.8	-	-115.8
Total Changes	-	-7.5	-	-7.5
Current Estimate	-	1708.6	-	1708.6

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	1479.1	0.0	1479.1
Previous Changes:				
Quantity	-	-1.2	-	-1.2
Schedule	-	+2.5	-	+2.5
Engineering	-	-	-	-
Estimating	-	+24.2	-	+24.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+25.5	-	+25.5
Current Changes:				
Quantity	-	-89.5	-	-89.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+22.1	-	+22.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-67.4	-	-67.4
Total Changes	-	-41.9	-	-41.9
Current Estimate	-	1437.2	-	1437.2

b. Previous Change Explanations --

Procurement

Economic: Revised economic escalation rates.

Quantity: Deletion of funding for production and launch of Spacecraft #10.

Schedule: Delay in funding for Expendable Launch Vehicle (ELV) services for S/C #7,8, and 9.

Estimating: Current and prior year inflation offset; addition of EHF capability; revised annual ELV payment schedule; reduced funding due to elimination of Space Transportation System (STS) option.

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised economic escalation indices (Economic)	N/A	-30.6
Deleted production and launch of Spacecraft #10 (Quantity)	-89.5	-113.2
Adjustment for current & prior year inflation (Estimating)	+5.5	+6.5
Added Engineering Services on production contract for FY94-97 (Estimating)	+17.8	+23.3
Revised estimates for inflation, ILS, and DBOF (Pro-rata share) (Estimating)	-1.2	-1.8
Procurement Subtotal	-67.4	-115.8

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
171.610	2.578	6.489	--	--	9.167	--	--	18.234	189.844

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

UHF FOLLOW-ON:	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Company, El Segundo, CA N00039-88-C-0300, FFP Award: July 29, 1988 Definitized: July 29, 1988	$1374.7	N/A	10

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1603.1	N/A	9	$1603.1	$1603.1

Explanation of Change:

15. Contract Information (Cont'd):
Cost and Schedule variance reporting is not required on this FFP contract.

The current contract price includes the addition of an EHF capability which was contained in a contract modification executed on 13 Dec 1990.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 63.6% (7 yrs/11 yrs)

(2) Percent Program Cost Appropriated: 80.2% ($1370.5 / $1708.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY87-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-97)	Total
RDT&E	-	-	-	-	-
Procurement	1370.5	159.8	122.3	56.0	1708.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1370.5	159.8	122.3	56.0	1708.6

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1507 Weapons Procurement, Navy								
1987				22.6	23.3	23.3	23.3	2.7
1988	1	88.3	187.4	115.6	123.9	123.9	123.8	3.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1989				142.6	158.8	158.8	150.8	4.2
1990	2		245.3	277.4	319.6	319.5	227.0	4.0
1991	3	90.1	439.1	207.0	244.4	244.0	100.4	4.3
1992	3		387.0	209.2	253.1	248.8	44.0	2.8
1993				199.9	247.4	244.1	23.0	2.4
1994				126.2	159.8			2.4
1995				94.5	122.3			2.3
1996				38.1	50.4			2.3
1997				4.1	5.6			2.2
1998								2.2
1999								2.2
Subtot	9	178.4	1258.8	1437.2	1708.6	1362.4	692.3	
Grand Total	9	178.4	1258.8	1437.2	1708.6	1362.4	692.3	

17. Production Rate Data:

a. Production Baseline Rate

This section is not applicable as satellite production is funded at a rate less than six units per fiscal year.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	159.8	0.0	-159.8	-159.8
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	122.3	0.0	-122.3	-122.3
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	56.0	0.0	-56.0	-56.0

This section is not applicable as satellite production is funded at a rate less than six units per fiscal year.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	1/0

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The support functions for UHF Follow-On will be similar to those required for the existing UHF communications satellite constellation. Costs are born by the Program Executive Officer for Space, Communications and Sensors and the Naval Space Command. The operations and support cost estimate was made in February 1990 in support of a SECDEF Cost Analysis Improvement Group (CAIG) review. The antecedent annualized costs listed represent the average costs for the FLTSAT satellite constellation for FY 1986 to FY 1988.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per UHF Follow-On	Avg Annual Cost Per FLTSAT Support
Orbital Support	1.6	2.0
Anomaly Analysis	0.0	0.6
GSE&I	0.0	0.5
Total	1.6	3.1

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&MN	3.1	0.6	0.6	1.2	5.5
Total	3.1	0.6	0.6	1.2	5.5

DoD-2 UAV

93-076

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: UAV

AS OF DATE: December 31, 1992

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1. (U) **Designation and Nomenclature (Preferred Name):**
   Unmanned Aerial Vehicles (UAV)

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

2. (U) **DoD Component:** Navy

   Joint Participants:
   Army, Navy, Marine Corps, Air Force

3. (U) **Responsible Office and Telephone Number:**

Program Executive Officer	RADM George Wagner
Cruise Missiles Project and	Assigned: February 8, 1991
Unmanned Aerial Vehicles Joint Proj	AV 222-7409 COMM 703-692-7409
Washington, DC 20361-1014	

4. (U) **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0305141D
   PROCUREMENT:
   APPN 0300 ICN 0000000 (DCA/DNA)

No Security Objection
to Open Publication
(AS AMENDED)
93-C-0460
MAY 27 1993
Office of Naval Operations
Dept. of the Navy

[redacted]

93-726

[redacted]

5. (U) Related Programs: None.

6. (U) Mission and Description:
The total Unmanned Aerial Vehicles-Joint Program encompasses five significant programs; Close Range, Short Range, Medium Range, Maritime, and Endurance. UAVs are a family of powered aerial vehicles which do not carry a human operator and which are designed to carry a non-lethal payload. Missions may include: Reconnaissance; surveillance; target acquisition; target spotting; command and control; meteorological data collection, nuclear, biological, and chemical detection, special operations support; and disruption and deception.

This SAR covers three programs; Close Range, Short Range, and Medium Range.

The Close Range (CR), system will provide Reconnaissance, Surveillance, and Target Acquisition (RSTA) capabilities and meteorological data to commanders of lower level tactical units. The system will be highly mobile, easy to operate and maintain with a minimum of manpower and training and capable of launch and recovery in constrained operational environments.

The Short Range (SR) system is the developmental baseline for a common architecture to achieve interoperability within the family of UAVs. The system will provide commanders with near-real-time intelligence, reconnaissance, and battlefield surveillance. SR is intended for employment in environments where immediate feedback is needed, manned aircraft are unavailable, or excessive risk or other conditions render use of manned aircraft less than prudent.

The Medium Range (MR) system is being developed to provide quick response capability to obtain high quality imagery in both low and high threat environments. It is a small profile, high-speed, fully autonomous vehicle that is capable of air and ground launch. The multi-theater role supports warfighting operations under most weather conditions, during either day or night. The air launch platforms are the USN/USMC F/A-18(C/D) and USAF F-16R. The Air Force will also ground launch the MR UAV.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In response to congressional direction in FY 1988 to consolidate the management of DOD nonlethal UAV programs, the Under Secretary of Defense (Acquisition) established the UAV Joint Project Office (JPO). An Executive Committee (EXCOM) was established on 7 April 1988 with overall responsibility for DOD UAV programs at the OSD level. In 1991 the EXCOM was disestablished and DOD UAV programs were brought under the Defense Acquisition Board (DAB) procedures and management.

7a. (U) Program Highlights (Cont'd):

The Navy is the Executive Service for the UAV JPO, with full authority, responsibility, and accountability for designing, developing, procuring, and transitioning UAV systems to the Services. The systems must meet the requirements validated by the Joint Requirements Oversight Council (JROC) commensurate with available funding.

The following gives specific highlights for each UAV program:

Close Range: A risk reduction technology demonstration program for the CR system was implemented during FY 1991 and completed FY 1992. Six companies participated in a technology demonstration of a 200 pound class air vehicle. In addition, two companies demonstrated lightweight Forward Looking Infrared (FLIR) payload devices that would be capable of being carried by a 200 pound air vehicle. These efforts were intended to reduce both technical and schedule risk to the total CR program. Demonstrations showed that current technology supports the concurrent use of a 50 pound FLIR and a 200 pound air vehicle.

Short Range: McDonnell Douglas Missile Systems Company and Israel Aircraft Industries (IAI) were awarded contracts in September 1989. Following Technical Evaluation Test and Limited User Test I (LUT I), the source selection authority selected IAI as the winning Short Range prime contractor on 30 Jun 92. On 28 Dec 92 the contract with IAI was novated, making TRW the prime contractor and IAI the principal sub-contractor. The Defense Acquisition Board (DAB) recommended approval and the Acquisition Decision Memorandum (ADM) of 19 January 1993 approved the Low Rate Initial Production for an additional seven systems, and approved initiating effort on the Block II improvement program.

Medium Range: The Engineering and Manufacturing Development contract was awarded in June 1989 to Teledyne Ryan Aeronautical (TRA). In June 1991, a modification to the contract redefined the program and directed the contractor to produce metallic vice composite vehicles. The payload is the Advanced Tactical Aerial Reconnaissance System built by Martin Marietta Electronics Systems under the management of the USAF. Other accomplishments include completion of the F/A-18 and F-16 wind tunnel tests, Mid Air Retrieval System demonstration and F/A-18 aircraft fit check. On 20 September 1991 roll out of the first developmental test vehicle occurred at TRA in San Diego. A Memorandum Of Agreement was signed among all participants which provides for all interfacing programs to exchange schedule/program information and to meet quarterly. Preliminary Design Review (PDR) of the BQM-145A was conducted in April 1992. The U. S. Navy conducted a limited aircraft carrier suitability test in December

7a. (U) Program Highlights (Cont'd):

1992 to verify the ability of the MR UAV to land aboard an aircraft carrier. TRA completed Contractor Flight Test, phase I (CFT-I) in February 1993.

b. (U) Significant Developments Since Last Report --
An ADM was signed 3 January 1992 designating three programs as ACAT 1D.

c. (U) Changes Since As Of Date --
An ADM was signed 19 January 1993 approving LRIP for seven Short Range UAV systems.

8. (U) Threshold Breaches:
There is currently a 7% procurement cost breach to the Acquisition Program Baseline (APB) in the Short Range program, because the FY 88 base-year dollars are based on 1992 inflation rates and the Current Estimate base-year dollars are based on 1993 inflation rates. The 1993 inflation rates decreased, which generated an increase in base-year dollars from 1992 to 1993. A Program Deviation Report and revised APB have been submitted for approval. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:
Close Range

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone 0	JAN 90	N/A	JAN 90
Milestone I/II	SEP 92	N/A	JAN 94(Ch-1)
IOT&E			
Start	FEB 96	N/A	OCT 96(Ch-1)
Complete	FEB 97	N/A	FEB 97
Milestone III	FEB 97	N/A	JUL 97(Ch-1)
Full Rate Production Contract Award	FEB 97	N/A	JUL 97(Ch-1)
First Unit Equip (FUE)	JUN 97	N/A	AUG 97(Ch-1)
Initial Operating Capability (IOC)	FEB 98	N/A	FEB 98

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Delayed due to the ORD not being approved as of this report.

9d. (U) Schedule (Cont'd):
Close Range

d. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-006-91, UAV Program Fielding Sequence, 25 March 1991; JROCM-009-91, Service Review of UAV System Rqmts, 4 April 1991; JROCM-008-91, UAV Medium Range Program Restructure, June 1991; UAV JPO Charter Signed 16 October 1989. Defense Acquisition Board held 10 December 1991. Acquisition Decision Memorandum (ADM) signed 3 Jan 1992.

(U) Approved Program: None.

Short Range

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone 0	JAN 89	JAN 89	JAN 89
Milestone I	MAY 89	MAY 89	MAY 89
Milestone II/IIIA	AUG 89	AUG 89	AUG 89
NDI Contract Award Date	N/A	SEP 89	SEP 89(Ch-1)
Service Final DT&E (TET)			
Start	N/A	DEC 90	DEC 90(Ch-1)
Complete	N/A	APR 92	APR 92(Ch-2)
Early Operational Assessment (LUT I)			
Start	N/A	JUN 92	JUN 92(Ch-1)
Complete	N/A	JUL 92	JUL 92(Ch-1)
Low-Rate Production Review (LRPR)	N/A	JAN 93	JAN 93(Ch-1)
Low-Rate Production Award	SEP 92	JAN 93	FEB 93(Ch-2)
Low-Rate Production First Delivery	DEC 93	MAY 94	MAY 94(Ch-2)
IOT&E			
Start	APR 94	NOV 94	NOV 94(Ch-2)
Complete	AUG 94	MAR 95	MAR 95(Ch-2)
Milestone IIIB	SEP 92	N/A	N/A (Ch-3)
Milestone IIIC	SEP 94	N/A	N/A (Ch-3)
Milestone III	N/A	JUN 95	JUN 95(Ch-1)
Full Rate Production Contract Award	SEP 94	JUN 95	JUN 95(Ch-2)
First Unit Equipped (FUE)	OCT 94	JUL 95	JUL 95(Ch-2)
Organic Support	N/A	JUL 95	JUL 95(Ch-1)
Initial Operating Capability (IOC)	JUN 95	FEB 96	FEB 96(Ch-2)

b. (U) Previous Change Explanations -- None.

9c. (U) Schedule (Cont'd):
Short Range

c. (U) Current Change Explanations --

(Ch-1) These milestones have been added to the approved Acquisition Program Baseline, dated 19 January 1993.

(Ch-2) The scheduled completion of the Technical Evaluation Test (TET) slipped from October 1991 to April 1992 because insufficient data had been accumulated to validate if the competing systems were ready for Limited User Test (LUT). This slip in schedule affected all of the schedule dates from that date forward.

(Ch-3) Milestones IIIB and IIIC have been replaced by one full rate production decision, Milestone III.

d. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-006-91, UAV Program Fielding Sequence, 25 March 1991; JROCM-008-91, UAV Medium Range Program Restructure, June 1991; UAV JOP Charter Signed 16 October 1989. Defense Acquisition Board held 10 December 1991. Acquisition Decision Memorandum (ADM) signed 3 Jan 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 January 1993.

Medium Range

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Dem/Val Contract Award	JUN 89	N/A	JUN 89
Milestone II			
Milestone IIA	JUN 89	N/A	JUN 89
Milestone IIB	MAR 93	N/A	JAN 94(Ch-1)
Low-Rate Production Award	OCT 95	N/A	OCT 95
Low-Rate Production First Delivery	DEC 96	N/A	JAN 97(Ch-1)
IOT&E			
Start	OCT 95	N/A	JAN 96(Ch-1)
Complete	APR 96	N/A	JUL 96(Ch-1)
Milestone III			
MS IIIB - USMC/USAF	OCT 96	N/A	OCT 96
MS IIIC - USN	OCT 97	N/A	OCT 97

9a. (U) Schedule (Cont'd):
Medium Range

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Full-Rate Production Contract Award	OCT 97	N/A	OCT 96
Initial Operating Capability (IOC)			
USMC	JUN 97	N/A	JUN 97
USAF	DEC 97	N/A	APR 99(Ch-2)
USN	MAR 98	N/A	APR 98(Ch-1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Delayed due to the ORD not being approved as of this report.

(Ch-2) Delayed due to slip in ATARS schedule which is driven from the F-16R.

d. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-006-91, UAV Program Fielding Sequence, 25 March 1991; JROCM-009-91, Service Review of UAV System Rqmts, 4 April 1991; JROCM-008-91, UAV Medium Range Program Restructure, June 1991; UAV JPO Charter signed 16 October 1989. Defense Acquisition Board held 10 December 1991. Acquisition Decision Memorandum (ADM) signed 3 Jan 1992.

(U) Approved Program: None.

10. (U) Performance Characteristics:
Close Range

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Radius of Action (km)	50	N/A / N/A		50	
Mission Duration (hrs)	4	N/A / N/A		3	(CH-1)
Altitude	15000	N/A / N/A		10000	(CH-1)
Gross Take-off Weight (lbs)	100	N/A / N/A		2 per transportable	(CH-1)

b. (U) Previous Change Explanations -- None.

10c. (U) Performance Characteristics (Cont'd):
Close Range

c. (U) Current Change Explanations --

(Ch-1) Parameters are latest testing data from the Operational Requirement Document. Objective and threshold will be approved at next milestone review.

d. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-006-91, UAV Program Fielding Sequence, 25 March 1991; JROCM-009-91, Service Review of UAV System Rqmts, 4 April 1991; JROCM-008-91, UAV Medium Range Program Restructure, June 1991; UAV JPO Charter Signed 16 October 1989. Defense Acquisition Board held 10 December 1991. Acquisition Decision Memorandum (ADM) signed 3 Jan 1992.

(U) Approved Program: None.

Short Range

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Mission Duration (hrs)	12	12 / 8	11.6	8	(CH-1)
Climb Rate (ft/min) @ MSL standard day	1000	1000 / 500	761	500	(CH-1)
Altitude (ft/MSL standard day)	N/A	30000 / 15000	15,500	15,000	(CH-2)
Operating Range (km)	N/A	300 / 200	267	200	(CH-2)

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):
Short Range

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

d. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-006-91, UAV Program Fielding Sequence, 25 March 1991; JROCM-009-91, Service Review of UAV Systems Rqmts, 4 April 1991; JROCM-008-91, UAV Medium Range Program Restructure, June 1991; UAV JPO Charter Signed 16 October 1989. Defense Acquisition Board (DAB) signed 3 Jan 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 January 1993.

10d. (U) Performance Characteristics (Cont'd):
Medium Range

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate	
Radius of Action (nm) w/302# payload	350	N/A / N/A		650km	(CH-1)
Mission Duration (hrs)	2	N/A / N/A		2	
Altitude (ft MSL)	40000	N/A / N/A		40000	
Navigation Accuracy (m) (CEP)	25	N/A / N/A		25	
Maintainability					
Mission TAT					
Ground Recovery(hrs)	6	N/A / N/A		6	
Water Revovery (hrs)	24	N/A / N/A		24	
Mission Availability	.85	N/A / N/A		.73	(CH-1)
Speed (MSL to 18000 ft) (knots)	550	N/A / N/A		550	
Greater than 20000 ft Mach	.9	N/A / N/A		.9	

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Parameters are latest testing data from the Operational Requirements Document.

d. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-006-91, UAV Program Fielding Sequence, 25 March 1991; JROCM-009-91, Service Review of UAV System Rqmts, 4 April 1991; JROCM-008-91, UAV Medium Range Program Restructure, June 1991; UAV JPO Charter Signed 16 October 1989. Defense Acquisition Board held 10 December 1991. Acquisition Decision Memorandum (ADM) signed 3 Jan 1992.

(U) Approved Program: None.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars): Close Range

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	76.7	0.0	78.8
Procurement	556.7	0.0	618.4
Flyaway	(377.2)		(417.0)
Other Weapon Systems	(149.1)		(167.3)
Peculiar Support	(3.0)		(3.4)
Initial Spares	(27.4)		(30.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	633.4	0.0	697.2
Escalation	384.4	0.0	320.6
Development (RDT&E)	(21.4)	(0.0)	(19.3)
Procurement	(363.0)	(0.0)	(301.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1017.8	0.0	1017.8
b. (U) Quantity --			
Development (RDT&E)	4	N/A	4
Procurement	172	N/A	172
Total	176	N/A	176

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None

e. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-009-91, Service Review of UAV Systems Rqmts, 4 April 1991; JROCM-008-91, UAV Program Restructure, 4 April 1991; UAV JPO Charter Signed 16 October 1989. Acquisition Decision Memorandum (ADM), signed 3 Jan 1992.

(U) Approved Program: None.

11a. (U) Total Program Cost and Quantity (Cont'd):
Short Range

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	138.2	131.3	133.5
Procurement	1093.4	1608.7	1723.8
Total Flyaway	(910.0)		(1393.1)
Other Weapon Systems	(118.7)		(178.9)
Peculiar Support	(29.2)		(60.9)
Initial Spares	(35.5)		(90.9)
Construction (MILCON)	0.0	15.7	15.9
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	1231.6	1755.7	1873.2
Escalation	429.8	814.3	696.8
Development (RDT&E)	(31.8)	(29.2)	(27.0)
Procurement	(398.0)	(780.9)	(665.8)
Construction (MILCON)	(0.0)	(4.2)	(4.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1661.4	2570.0	2570.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	50	50	50
Total	50	50	50

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-009-91, Service Review of UAV System Rqmts, 4 April 1991; JROCM-008-91, UAV Program Restructure, 4 April 1991; UAV JPO Charter Signed 16 October 1989. Acquisition Decision Memorandum (ADM), signed 3 Jan 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 19 January 1993.

11a. (U) Total Program Cost and Quantity (Cont'd):
Medium Range

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	317.2	0.0	322.3
Procurement	1419.4	0.0	1580.8
Total Flyaway	(1167.8)		(1306.9)
Other Weapon Systems	(251.6)		(0.0)
Other Weapon Systems Cost			(273.9)
Total Other Wpn Sys	(251.6)		(273.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	1736.6	0.0	1903.1
Escalation	1020.3	0.0	853.8
Development (RDT&E)	(69.7)	(0.0)	(64.6)
Procurement	(950.6)	(0.0)	(789.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2756.9	0.0	2756.9
b. (U) Quantity --			
Development (RDT&E)	25	N/A	25
Procurement	525	N/A	525
Total	550	N/A	550

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DOD UAV Master Plan approved 1 March 1991; JROCM-009-91, Service Review of UAV Systems Rqmts, 4 April 1991; JROCM-008-91, UAV Program Restructure, 4 April 1991; UAV JPO Charter Signed 16 October 1989. Acquisition Decision Memorandum (ADM), signed 3 Jan 1992.

(U) Approved Program: None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

Close Range

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1017.8	0.0	1017.8
(2) Quantity	176	0	176
(3) Unit Cost	5.783	N/A	5.783
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

The current year baseline that was established in the December 1991 SAR is based on an aggregate of the three end items, Close Range, Short Range, and Medium Range. A comparison of the current estimate against the aggregate current year baseline is provided below. This report will establish separate unit cost baselines for these programs, starting with the budget year (i.e., FY 1994).

Short Range

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2570.0	0.0	2570.0
(2) Quantity	50	0	50
(3) Unit Cost	51.400	N/A	51.400
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	128.9	0.0	60.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	128.9	0.0	60.0
(2) Quantity	3	0	0
(3) Unit Cost	42.967	N/A	N/A

The current year baseline that was established in the December 1991 SAR is based on an aggregate of the three end items, Close Range, Short Range, and Medium Range. A comparison of the current estimate against the aggregate current year baseline is provided below. This report will establish separate unit cost baselines for these programs, starting with the budget year (i.e., FY 1994).

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

Medium Range

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2756.9	0.0	2756.9
(2) Quantity	550	0	550
(3) Unit Cost	5.013	N/A	5.013
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

The current year baseline that was established in the December 1991 SAR is based on an aggregate of the three end items, Close Range, Short Range, and Medium Range. A comparison of the current estimate against the aggregate current year baseline is provided below. This report will establish separate unit cost baselines for these programs, starting with the budget year (i.e., FY 1994).

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
Program Acquisition			
(1) Cost (TY$)	6824.4	6636.7	N/A
(2) Quantity	776	776	N/A
(3) Unit Cost	8.794	8.552	N/A
Current Procurement	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	128.9	128.9	60.0
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	128.9	128.9	60.0
(2) Quantity	3	3	0
(3) Unit Cost	42.967	42.967	N/A

Note that the aggregate current estimate includes non-specific UAV program costs that are not directly associated with the Close Range, Short Range, and Medium Range vehicles.

13. (U) Cost Variance Analysis:
Close Range

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	98.1	919.7	0.0	1017.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-2.5	-93.0	-	-95.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.5	+59.8	-	+62.3
Other	-	-	-	-
Support	-	+33.2	-	+33.2
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	98.1	919.7	-	1017.8

13a. (U) Cost Variance Analysis (Cont'd):
Close Range

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	76.7	556.7	0.0	633.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.1	+39.8	-	+41.9
Other	-	-	-	-
Support	-	+21.9	-	+21.9
Subtotal	+2.1	+61.7	-	+63.8
Total Changes	+2.1	+61.7	-	+63.8
Current Estimate	78.8	618.4	-	697.2

Direction for preparing the December 1991 SAR was to roll up the funding for three programs (Close Range, Short Range, Medium Range) and report one cost line. The guidance from the 19 January 1993 DAB was to split the cost for three programs resulting in a change in the Cost Variance Analyses, Section 13.

Base Year dollars adjusted to match revised escalation rates.

b. (U) Previous Change Explanations --

13c. (U) Cost Variance Analysis (Cont'd):
Close Range

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-2.5
Increased estimate to reflect revised escalation indices. (Estimating)	+2.1	+2.5
RDT&E Subtotal	+2.1	--
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-93.0
Increased estimate to reflect revised escalation indices. (Estimating)	+39.8	+59.8
Increased support estimate to reflect revised escalation indices. (Support)	+21.9	+33.2
Procurement Subtotal	+61.7	--

13a. (U) Cost Variance Analysis (Cont'd):
Short Range

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	170.0	1491.4	0.0	1661.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-3.1	-67.6	-	-70.7
Quantity	-	-	-	-
Schedule	-	+21.6	-	+21.6
Engineering	-	-	-	-
Estimating	-6.4	+729.1	+19.9	+742.6
Other	-	-	-	-
Support	-	+215.1	-	+215.1
Subtotal	-9.5	+898.2	+19.9	+908.6
Total Changes	-9.5	+898.2	+19.9	+908.6
Current Estimate	160.5	2389.6	19.9	2570.0

13a. (U) Cost Variance Analysis (Cont'd):
Short Range

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	138.2	1093.4	0.0	1231.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.7	+483.3	+15.9	+494.5
Other	-	-	-	-
Support	-	+147.1	-	+147.1
Subtotal	-4.7	+630.4	+15.9	+641.6
Total Changes	-4.7	+630.4	+15.9	+641.6
Current Estimate	133.5	1723.8	15.9	1873.2

Direction for preparing the December 1991 SAR was to roll up the funding for three programs (Close Range, Short Range, Medium Range) and report one cost line. The guidance from the 19 January 1993 DAB was to split the cost for three programs resulting in a change in the Cost Variance Analyses, Section 13.

Base Year dollars adjusted to match revised escalation rates.

b. (U) Previous Change Explanations --

13c. (U) Cost Variance Analysis (Cont'd):
Short Range

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-3.3
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Adjustment for current & prior inflation. (Estimating)	+0.5	+0.6
Refined development requirements (Estimating)	-5.2	-7.0
RDT&E Subtotal	-4.7	-9.5
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-67.6
Adjustment for current & prior inflation. (Estimating)	-0.3	-0.5
Delay in procurement buy schedule. (Schedule)	--	+21.6
Increase in attrition spares (replacement air vehicles). (Estimating)	+483.6	+729.6
Adjustment for current & prior inflation. (Support)	-0.2	-0.3
Increased estimate for peculiar support, initial spares, and other weapon systems costs. (Support)	+147.3	+215.4
Procurement Subtotal	+630.4	+898.2
(3) MILCON		
Additional hanger facilities. (Estimating)	+15.9	+19.9
MILCON Subtotal	+15.9	+19.9

13a. (U) Cost Variance Analysis (Cont'd):
Medium Range

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	386.9	2370.0	0.0	2756.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-6.3	-248.4	-	-254.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+6.3	+216.1	-	+222.4
Other	-	-	-	-
Support	-	+32.3	-	+32.3
Subtotal	-	0.0	-	0.0
Total Changes	-	0.0	-	0.0
Current Estimate	386.9	2370.0	-	2756.9

13a. (U) Cost Variance Analysis (Cont'd):
Medium Range

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	317.2	1419.4	0.0	1736.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.1	+139.0	-	+144.1
Other	-	-	-	-
Support	-	+22.3	-	+22.3
Subtotal	+5.1	+161.3	-	+166.4
Total Changes	+5.1	+161.3	-	+166.4
Current Estimate	322.3	1580.7	-	1903.0

Direction for preparing the December 1991 SAR was to roll up the funding for three programs (Close Range, Short Range, Medium Range) and report one cost line. The guidance from the 19 January 1993 DAB was to split the cost for three programs resulting in a change in the Cost Variance Analyses, Section 13.

Base Year dollars adjusted to match revised escalation rates.

b. (U) Previous Change Explanations --

13c. (U) Cost Variance Analysis (Cont'd):
Medium Range

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-6.3
Increased estimate to reflect revised escalation indices. (Estimating)	+5.1	+6.3
RDT&E Subtotal	+5.1	--
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-248.4
Increased estimate to reflect revised escalation indices. (Estimating)	+139.0	+216.1
Increased support estimate to reflect revised escalation indices. (Support)	+22.3	+32.3
Procurement Subtotal	+161.3	0.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Close Range
(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5.783	-0.543	--	--	--	0.354	--	0.189	--	5.783

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

Short Range

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
33.228	-1.414	--	0.432	--	14.852	--	4.302	18.172	51.400

Medium Range

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5.013	-0.463	--	--	--	0.404	--	0.059	--	5.013

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) MEDIUM RANGE:

Teledyne Ryan Aero, San Diego, CA
N00019-89-C-0173, FPIF
Award: June 30, 1989
Definitized: June 30, 1992

Initial Contract Price		
Target	Ceiling	Qty
$171.2	$186.8	25

Current Contract Price		
Target	Ceiling	Qty
$174.5	$186.8	25

Estimated Price At Completion	
Contractor	Program Manager
$191.9	$190.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.8	$-2.5
Cumulative Variances To Date (03/31/93)	$1.0	$1.0
Net Change	$1.8	$3.5

Explanation of Change:

The original Medium Range contract was awarded Jun 89 (for $77.7M). The redefined Medium Range program ceiling price modification (186.8M) in Jun 91 to meet emerging requirements.

15. (U) Contract Information (Cont'd):

b.(U) Procurement --

(U) SHORT RANGE:	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Missile, St. Louis, MO N00019-89-C-0347, FFP Award: September 15, 1989 Definitized: September 15, 1989	$61.5	N/A	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$61.5	N/A	2	$61.5	$61.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) SHORT RANGE:	Initial Contract Price Target	Ceiling	Qty
TRW, SAN DIEGO, CA N00019-89-C-0346, FFP Award: September 15, 1989 Definitized: September 15, 1989	$41.6	N/A	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$185.5	N/A	7	$185.5	$185.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 22.2% (6 yrs/27 yrs)

(2) Percent Program Cost Appropriated: 10.6% ($673.3 / $6344.7)

16b. (U) Program Funding Summary (Cont'd):
Close Range

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Close Range

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	20.0	30.4	23.2	24.5	98.1
Procurement	-	-	-	919.7	919.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	20.0	30.4	23.2	944.2	1017.8

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Short Range

Appropriation	Prior Years (FY88-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2014)	Total
RDT&E	82.1	42.5	18.5	17.4	160.5
Procurement	358.2	60.0	211.4	1760.0	2389.6
MILCON	9.9	-	10.0	-	19.9
O&M	-	-	-	-	-
Total	450.2	102.5	239.9	1777.4	2570.0

16b. (U) Program Funding Summary (Cont'd):
Medium Range

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Medium Range

Appropriation	Prior Years (FY89-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2009)	Total
RDT&E	203.1	93.4	49.7	40.7	386.9
Procurement	-	-	72.0	2298.0	2370.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	203.1	93.4	121.7	2338.7	2756.9

c. (U) Annual Summary -- Close Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0400 RDT&E, Defense Agencies								
1991				4.5	5.2	5.2		4.3
1992				3.6	4.2	4.2	2.2	2.8
1993				8.8	10.6	10.6		2.4
1994				24.6	30.4			2.4
1995				18.4	23.2			2.3
1996				14.2	18.3			2.3
1997				4.7	6.2			2.2
Subtot	4			78.8	98.1	20.0	2.2	

16c. (U) Program Funding Summary (Cont'd):
Close Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0300 Procurement, Defense Agencies								
1997	8	3.4	29.4	45.2	61.1			2.2
1998	15	3.8	46.9	72.1	99.7			2.2
1999	16	2.5	42.9	66.0	93.3			2.2
2000	15	2.7	38.5	59.3	85.6			2.2
2001	21	2.6	50.1	77.1	113.8			2.2
2002	22		50.5	77.7	117.2			2.2
2003	22		48.8	75.1	115.8			2.2
2004	23		50.1	77.1	121.4			2.2
2005	18		26.9	41.3	66.5			2.2
2006	12		17.9	27.5	45.3			2.2
Subtot	172	15.0	402.0	618.4	919.7			
Grand Total	176	15.0	402.0	697.2	1017.8	20.0	2.2	

Note: Funding constraints may only permit 4 systems in 1993.

16c. (U) Program Funding Summary (Cont'd):
Short Range

c. (U) Annual Summary -- Short Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0400 RDT&E, Defense Agencies								
1989				11.1	11.8			4.2
1990				8.9	9.9			4.0
1991				16.1	18.5			4.3
1992				13.0	15.3			2.8
1993				22.0	26.6			2.4
1994				34.4	42.5			2.4
1995				14.6	18.5			2.3
1996				7.3	9.4			2.3
1997				6.1	8.0			2.2
Subtot				133.5	160.5			
Appropriation: 0300 Procurement, Defense Agencies								
1988				25.0	25.0			3.0
1989	2	7.3	23.8	31.6	35.2	35.2	35.2	4.2
1990	1	5.1	10.5	16.2	18.6	18.6	18.6	4.0
1991	1	7.6	3.5	21.8	25.8	25.8	16.7	4.3
1992	4	18.5	68.7	103.1	124.7	122.9	32.5	2.8

16c. (U) Program Funding Summary (Cont'd):
Short Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0300 Procurement, Defense Agencies (Cont'd)								
1993	3	34.1	47.3	104.1	128.9	80.3	15.9	2.4
1994		34.5		47.4	60.0			2.4
1995	7	18.8	106.3	163.3	211.4			2.3
1996	6	17.2	99.2	138.6	183.4			2.3
1997	6	17.8	105.3	135.1	182.7			2.2
1998	6	16.3	104.7	129.7	179.3			2.2
1999	5	16.3	95.0	108.7	153.5			2.2
2000	5	15.4	123.8	243.5	351.6			2.2
2001	4	2.6	105.1	124.3	183.4			2.2
2002		2.6	56.1	63.8	96.2			2.2
2003		2.6	56.6	63.3	97.5			2.2
2004		2.7	56.2	62.9	99.1			2.2
2005		2.7	56.8	63.5	102.3			2.2
2006		2.9	49.2	57.4	94.4			2.2
2007				4.0	6.7			2.2
2008				4.1	7.0			2.2
2009				4.0	7.2			2.2
2010				4.0	7.4			2.2

16c. (U) Program Funding Summary (Cont'd):
Short Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0300 Procurement, Defense Agencies (Cont'd)								
2011				4.1	7.7			2.2
2012				0.1	0.2			2.2
2013				0.1	0.2			2.2
2014				0.1	0.2			2.2
Subtot	50	225.0	1168.1	1723.8	2389.6	282.8	118.9	
Appropriation: 0500 Military Construction,Defense Agencies								
1992				8.2	9.9			2.8
1993								2.4
1994								2.4
1995				7.7	10.0			2.3
Subtot				15.9	19.9			
Grand Total	50	225.0	1168.1	1873.2	2570.0	282.8	118.9	

16c. (U) Program Funding Summary (Cont'd):
Medium Range

c. (U) Annual Summary -- Medium Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0400 RDT&E, Defense Agencies								
1989				19.7	21.0	21.0	21.0	4.2
1990				44.6	49.5	49.5	21.9	4.0
1991				29.0	33.3	33.3	25.1	4.3
1992				26.4	31.1	31.1	22.2	2.8
1993				56.5	68.2			2.4
1994				75.6	93.4			2.4
1995				39.3	49.7			2.3
1996				23.2	30.0			2.3
1997				5.2	6.9			2.2
1998				2.8	3.8			2.2
Subtot	25			322.3	386.9	134.9	90.2	
Appropriation: 0300 Procurement, Defense Agencies								
1995				55.6	72.0			2.3
1996	20		92.0	100.6	133.2			2.3
1997	22		70.4	116.4	157.4			2.2
1998	42		117.6	124.6	172.2			2.2

16c. (U) Program Funding Summary (Cont'd):
Medium Range

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0300 Procurement, Defense Agencies (Cont'd)								
1999	42		113.4	157.1	222.0			2.2
2000	42		109.2	130.3	188.1			2.2
2001	42		105.0	125.6	185.4			2.2
2002	42		105.0	123.6	186.4			2.2
2003	42		100.8	123.5	190.3			2.2
2004	42		96.6	118.9	187.3			2.2
2005	42		96.6	97.5	156.9			2.2
2006	42		96.6	91.5	150.6			2.2
2007	42		88.2	91.9	154.5			2.2
2008	42		92.4	91.5	157.2			2.2
2009	21		23.1	32.2	56.5			2.2
Subtot	525		1306.9	1580.8	2370.0			
Grand Total	550		1306.9	1903.1	2756.9	134.9	90.2	

17. (U) Production Rate Data:

Close Range

a. (U) Production Baseline Rate

Not required for pre-Milestone III programs.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	0.0		0.0	N/A
Procurement Qty	0	0		0	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	0.0		0.0	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	919.7		-919.7	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

Short Range

a. (U) Production Baseline Rate

Not required for pre-Milestone III programs.

17b. (U) Production Rate Data (Cont'd):
Short Range

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	60.0		-60.0	N/A
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	211.4	0.0	-211.4	-211.4
Procurement Qty	0	7	0	-7	-7
Proc. Unit Cost	N/A	30.200	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	1760.0	0.0	-1760.0	-1760.0

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

Medium Range

a. (U) Production Baseline Rate

Not required for pre-Milestone III programs.

17b. (U) Production Rate Data (Cont'd):
Medium Range

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		72.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		2298.0		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
Close Range

a. (U) Assumptions and Ground Rules --

Not required for pre-Milestone II programs.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

Short Range

a. (U) Assumptions and Ground Rules --

The Operating and Support costs include such items as Base Operations/Real Property Maintenance Activities for site activation equipment installation and one-time BASOPS. It also includes replenishment repair parts required to resupply initial stockage.

18b. (U) Operating and Support Costs (Cont'd):
Short Range

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per System	Avg Annual Cost Per Antecedent
Operations & Maint.	877.4	877.4
Total	877.4	877.4

c. (U) Contractor Support Costs -- None.

Medium Range

a. (U) Assumptions and Ground Rules --

Not required for pre-Milestone II programs.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

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OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: AAA

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
ADVANCED AMPHIBIOUS ASSAULT (AAA)

2. DoD Component: USMC

3. Responsible Office and Telephone Number:
DRPM AAA
DEPT. OF THE NAVY
UNITED STATES MARINE CORPS
WASHINGTON, DC 20380-0001

COL TIBOR SADDLER
Assigned: January 30, 1990
AV 226-1104 COMM (703) 696-1104

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603611M (Shared) Project B0020

5. Related Programs:
ASSAULT AMPHIBIOUS VEHICLE MODEL 7A1 (AAV7A1)

6. Mission and Description:
The Advanced Amphibious Assault (AAA) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The AAA Program is currently in the Concept Exploration/Definition Phase. The AAA will provide the Marine Corps with the capabilities to execute the full range of it's littoral warfare missions as well as the requisite survivability, offensive firepower, and mobility to support future combat operations ashore. Currently, two material solutions are being considered from

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6. Mission and Description (Cont'd):

industry.

7. Program Highlights:

a. Significant Historical Developments --

A mission area analysis, completed in 1988 to identify future littoral warfare requirements, identified significant deficiencies in the Marine Corps existing amphibious vehicle. A mission needs statement (MNS) was submitted to DoD and a series of Milestone 0 program reviews were conducted by the Defense Resources Board (DRB) and the Defense Acquisition Board (DAB) in 1988. The purpose of these reviews were to validate the stated mission need and permit the analysis of alternatives that would eliminate mission area deficiencies. Approval from both the DRB and DAB was received in 1988 and is documented in the Acquisition Decision Memorandum (ADM) and Program Decision Memorandum (PDM) respectively. Their approval formally initiated the Concept Exploration/Definition (CE/D) phase where no less than 13 alternative solutions have been evaluated. Based on this and other analyses, the Advanced Assault Amphibian Vehicle (AAAV) was determined to be the most effective system by a significant margin over all other candidates. This phase is nearing completion and will end with the DAB Milestone I program review.

NOTE: All total program cost figures contained in this report reflect ONLY a summation up to and including the FY 94 President's Budget. Outyear estimates in all categories will be provided after the DAB Milestone I decision is made and the establishment of an Acquisition Program Baseline (APB).

b. Significant Developments Since Last Report --

None-Initial Selected Acquisition Report.

This system is expected to satisfy mission requirements.

c. Changes Since As Of Date -- None

8. Threshold Breaches:

There are currently no Nunn-McCurdy Unit Cost breaches. This program does not have an Acquisition Program Baseline (APB).

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9. Schedule:

a. Milestones --	Planning Estimate	Approved Program	Current Estimate
Milestone 0	AUG 88	N/A	AUG 88
JROC Validation	NOV 91	N/A	NOV 91
Marine Corps Program Decision Memorandum (MCPDM)	OCT 93	N/A	OCT 93
Milestone I	MAR 94	N/A	MAR 94
Dem/Val RFP Release	APR 94	N/A	APR 94
Dem/Val Contract Award	JAN 95	N/A	JAN 95
Milestone II	TBD	N/A	TBD
Milestone III	TBD	N/A	TBD
IOC	TBD	N/A	TBD

b. Previous Change Explanations -- None - Initial SAR submission.

c. Current Change Explanations -- None - Initial SAR submission.

d. References --

Planning Estimate:
This planning estimate reflects FY 94 President's Budget, dated 8 April 93. A formal SAR rebaseline for Milestone I is anticipated in March 1994.

Approved Program: None.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Land Speed (hard surface road) (MPH)	45	N/A	/ N/A		45
Water Speed (Knots) High	20-25	N/A	/ N/A		20-25
Surf Capability (Ft)	8	N/A	/ N/A		8
Payload/Cargo Personnel (Combat equipped 285 lbs. ea)	17-18	N/A	/ N/A		17-18
Cargo (lbs)	5130	N/A	/ N/A		5130
Operating Range Water (Miles/Speed) (Kts)	75/20	N/A	/ N/A		75/20
Land (Miles/Speed) (MPH)	300/25	N/A	/ N/A		300/25

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10b. **Performance Characteristics (Cont'd):**

b. Previous Change Explanations -- None - Initial SAR submission.

c. Current Change Explanations -- None - Initial SAR submission.

d. References --

Planning Estimate:
Pre-Milestone I performance characteristics extracted from Draft ORD dated 23 April 1993.

Approved Program: None.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

a. Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	131.4	0.0	131.4
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
** Total FY 92 Base-Year $	131.4	0.0	131.4
Escalation	5.1	0.0	5.1
Development (RDT&E)	(5.1)	(0.0)	(5.1)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
** Total Then-Year $	136.5	0.0	136.5

** Reflects totals up to FY 94 President's Budget ONLY. Outyear estimates will be provided in all categories after Milestone I DAB decision and the establishment of an APB.

b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	0	N/A	0
Total	0	N/A	0

Fully configured prototypes and their quantities cannot be defined until the decision of the Milestone I DAB has been made.

11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
FY 1994 President's Budget dated 8 April 1993.

Approved Program: None.

12. Program Acquisition/Current Procurement Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

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13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	136.5	0.0	0.0	136.5
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	136.5	-	-	136.5

13a. **Cost Variance Analysis (Cont'd):**

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	131.4	0.0	0.0	131.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	131.4	-	-	131.4

NOTE: All Total program cost figures contained in para. 13a Summary (Current (Then-Year) Dollars) and Summary (FY 1992 Constant (Base-Year) Dollars) reflect ONLY a summation up to and including the FY 94 President's Budget. Outyear estimates in all categories will be provided after the DAB Milestone I decision is made and the establishment of an APB.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

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14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. **Contract Information**: None.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 66.7% (4 yrs/6 yrs)

(2) Percent Program Cost Appropriated: 62.3% ($85.1 / $136.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY90-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	85.1	20.6	30.8	-	136.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	85.1	20.6	30.8	-	136.5

* Figures contained in Paragraphs 16a (1) and (2) reflect ONLY the Completion of the program AS DEFINED in the SAR report.

** Total includes prior years and FY 94 President's Budget ONLY. Out year estimates will be provided after Milestone I DAB decision and the establishment of an APB.

16c. **Program Funding Summary (Cont'd):**

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1990				4.7	4.5	4.5	4.5	4.0
1991				17.9	17.7	17.7	17.7	4.3
1992				24.9	25.3	25.1	23.8	2.8
1993				36.2	37.6	5.5		2.4
1994				19.4	20.6			2.4
1995				28.3	30.8			2.3
Subtot				131.4	136.5	52.8	46.0	
Grand Total				131.4	136.5	52.8	46.0	

** Grand Total reflects FY 90 - 95 total ONLY. Out year estimates in all categories to be provided after successful DAB Milestone I review and establishment of APB.

17. **Production Rate Data:**

a. Production Baseline Rate - None.

b. Not applicable for Pre-Milestone II programs.

c. Deliveries (Plan/Actual) -- None.

d. Not applicable for Pre-Milestone II programs.

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18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CMU

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION
AS AMENDED
MAY 24 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Cheyenne Mountain Upgrade (CMU)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ESC/SR
50 GRIFFISS ST.
HANSCOM AFB, MA 01731-5000
COMM (617) 271-5020

COL MICHAEL C. MUSHALA
Assigned: August 1, 1992
AV 478-5980 X 5020

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0102310F, 0305906F (Shared)
PROCUREMENT:
APPN 3080 ICN 833160 (Air Force)
APPN 3080 ICN 837905 (Air Force) (Shared) (Spares)

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5. (U) Related Programs:
ITW/AA, EMENS, PAVE PAWS, SSNIP, ASAT, SPADOCS, DSP, NMS, SDI, AFAMPE, ATWC, JRSC, GWEN, MILSTAR, JSS, NOCC/SOCC, ASPADOC, IDHS, COBRA DANE, FEMS, NADS, SEEK IGLOO, FARR.

6. (U) Mission and Description:
The CMU program develops system capabilities to ensure fully capable, timely and reliable day-to-day processing of all tactical warning mission data for atmospheric, ballistic missile and space threats. These capabilities must endure natural or man-made disturbances, jamming, sabotage and other effects to ensure the availability of Integrated Tactical Warning and Attack Assessment (ITW/AA) information in peacetime and through a conflict until physically destroyed. The capacity of the CMU "system of systems" and their interfaces is sufficient to handle both single event, and small and large scale raids. It also provides credible warning data to all U.S. forces and the National Command Authorities (NCA). Transmission of missile warning sensor messages to the Cheyenne Mountain AFB (CMAFB) and the Alternate Processing and Correlation Center (APCC), and forward fixed users is processed by the Survivable Communications Integration System (SCIS) equipment. Warning messages from air and intelligence sources are transmitted to the CMAFB correlation center directly. Space warning data is provided to CMAFB through Space Defense Operation Center (SPADOC) and Alternate SPADOC at Dahlgren Naval Space Surveillance Center. Messages are processed by the Communications System Segment Replacement (CSSR) and passed to the mission centers. These mission centers (SPADOC, (for CMAFB only) Command Center Processing and Display System Replacement (CCPDS-R) and Granite Sentry) then process the information and generate displays critical to decision makers.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The Cheyenne Mountain Upgrade (CMU) program consolidates six ongoing development programs in support of the Integrated Tactical Warning and Attack Assessment (ITW/AA) system. They encompass communications, processing and display systems being acquired for CMAFB, CO, and APCC, which is a peacetime correlation center at Offutt AFB, NE. All six programs are being acquired to correct deficiencies of the 427M system and to comply with the Commander-in-Chief North American Aerospace Defense/U.S. Commander-in-Chief Space Command (CINCNORAD/USCINCSPACE) overall ITW/AA system architecture. The consolidation of these programs under the CMU is to satisfy direction contained in the 1989 Appropriation Bill. That is, to consolidate the individual programs into a single integrated program and a single line item for each affected appropriation. Granite Sentry and SPADOC 4A system element achieved Initial Operational Capability (IOC) in 1989. The DAB met in September 1989 and approved a consolidated acquisition and

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7a. (U) Program Highlights (Cont'd):

integration approach outlined in the Acquisition Decision Memorandum, dated 25 October 1989, on the CMU program. This approach is delineated in the Acquisition Program Baseline (APB) for CMU, submitted 9 November 1989 and approved by the DAE on 12 Feb 90.

We have made significant progress within the overall program baseline to meet Full Operational Capability in Dec 95. CSSR Technical Control Subsystem (TCS) achieved IOC on 11 Apr 91, SPADOC 4B reached IOC on 30 Jul 91 and CSSR Message Processing and Distribution System (MPDS) achieved IOC on 14 Aug 91. These new systems have greatly increased the capability of the warning system.

Granite Sentry Phase II IOT&E was completed in August 1991 and exited trial period on 19 Dec 91. The details of the remaining effort were captured in the new version of the System Segment Specification. Particular emphasis was placed on defining the requirements of the Battle Staff Support Center, which is the last center to receive Granite Sentry upgrades. This effort will be delivered by Jun 95.

In previous years, the SCIS program experienced schedule delays due to several factors. These included a change in the threat environment, the fact that the original hardware vendor, Tolerant, no longer manufactured the selected hardware and the SCIS prime contractor experienced significant schedule delays, specifically in software development and system testing. The System Program Office (SPO) issued a cure notice in early 1991. The SCIS contractor submitted a favorable recovery plan on 6 Jun 91, which included a fully coordinated decision to upgrade the SCIS architecture to a Digital Equipment Company (DEC) fault tolerant computer; since this decision was made, the contractor has remained on track for a Dec 1994 Phase I IOC.

SPADOC Block C went on contract in Oct 91. SPADOC/Space Surveillance Center interface tests were conducted on 28 Oct and 9 Nov 91 at the off-site test facility and the transfer of the entire space catalog was successfully completed three times. SPADOC was also accredited for multi-level security, a major technical accomplishment. SPADOC Block C Version I Critical Design Review (CDR) was completed on schedule in Dec 91.

The Space and Warning System Center (SWSC) received security accreditation on a CCPDS-R Processing and Display Subsystem (PDS) in Nov 91 and the program completed STRATCOM unique subsystem CDR the following month.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
CMU has continued to achieve the baseline technical requirements as the program progresses. The Defense Acquisition Board (DAB), scheduled for Jun 92, was cancelled because it was determined that the CMU program is meeting the content, schedule and funding criteria established in the 25 Oct 89 Acquisition Decision Memorandum (ADM). Overall, we now have an integrated system-of-systems which will be responsive to any likely wartime scenario. Contractor performence problems have been systematically resolved and quality products are being delivered.

The Granite Sentry software development effort was transferred to Air Force Materiel Command (AFMC). AFMC combined all system engineering, hardware and software engineering into one effort with Martin Marietta as prime. The Request For Proposal (RFP) was issued on 5 Oct 92, and the proposal was received on 5 Nov 92.

The SCIS program kept to its recovery plan in 1992 by implementing an undefinitized change order, P00047 which was definitized in P00050 on 14 Aug 92. E-Systems purchased the DEC fault tolerant equipment and successfully ported code from the Tolerant system. E-Systems conducted four demonstrations to show that the code was ported and to show the basic architectural changes that were prototyped in the early design period. These demonstrations occurred on 8 Jan 92, 31 Mar 92, 3 Jun 92 and 31 Aug 92. The program also successfully completed two technical design reviews (TDR) (TDR 2 on 2 Apr 92 and TDR 3 on 4 Sep 92). TDR 2 presented the preliminary hardware design. TDR 3 presented the detailed hardware design and reviewed the Prime Item Function Specifications. In addition, the SPO and the contractor completed all Phase 1 Site Surveys and conducted a SCIS early interoperability test at the SWSC in Dec 92. The system now provides for long term growth and will meet final system requirements.

CSSR Black Technical Control reconfiguration effort has successfully completed DT&E testing and is currently being installed in CMAFB.

The facility preparation and communication equipment installation efforts at APCC are well underway.

SPADOC Block C Version II Preliminary Design Review (PDR) was successfully held in Jan 92. Version II CDR was completed ahead of schedule in Aug 92. This program is solidly on track.

Recent accomplishments demonstrate that CCPDS-R is continuing to progress towards its IOC in Sep 93. The CCPDS-R program accomplished highly successful Formal Qualification Tests (FQT) for the Common

7b. (U) Program Highlights (Cont'd):

Subsystem in March 92 and Processing and Display Subsystem (PDS) in Jul 92. The early USSTRATCOM capability and the USSTRATCOM development and test facility were delivered ahead of schedule in Sep 92. The classified stand-alone security accreditation to operate the Common Subsystem and PDS in the Develpment Test Facility was received in Aug 92. AFSPACECOM Designated Approving Authority (DAA) approved CCPDS-R to operate for the purpose of development testing of the interoperability configuration with Common Subsystem, PDS, CSSR, sensors, and other interfacing systems in Dec 92.

The CMU Program will satisfy all mission requirements.

c. (U) Changes Since As Of Date --

CSSR continues interoperability tests with CCPDS-R, SCIS and Air Force Automated Message Process Exchange (AFAMPE). Testing has been very successful in that problems are uncovered early and corrected prior to formal DT&E.

E-Systems completed coding Software Build 1 in early Jan 93. The contractor completed dry runs of Build 1 on 22 Feb 93. The baseline was then frozen for testing. Build 1 software testing was successfully completed on 17 Mar 93, one week ahead of schedule. E-Systems and GTE began the site preparation work to install SCIS in the SWSC on 22 Feb 93. Installation began 8 Mar 93. A 50% installation review was conducted on 18 Mar 93 which verified that installation is on track for completion on 5 Apr 93.

The SPADOC program continues to be aggressively managed. Numerous risk mitigation activities are underway, based on lessons learned from the previous effort (SPADOC 4B). Chief among these are early interface testing with the Space Surveillance Sensors, which is driving out interface inconsistencies to be fixed now rather than in IOT&E. These interface tests were successfully conducted during Feb/Mar 93.

The CCPDS-R program successfully completed Phase II development testing and interoperability testing with CSSR, SCIS Fallback and other interfacing systems in Feb 93. During Mar 93 installation and development testing was begun in the CMAFB. The PDS site testing is also underway at the National Military Command Center (NMCC), NMCC Site R, CMAFB and the National Military Joint Intelligence Center (NMJIC). The CCPDS-R program is completing the final planning for the upcoming IOT&E test schedule, to begin on 1 Jun 93. Several key elements of the test program (test scenarios, operator crew training and familiarization, Measures of Effectiveness (MOEs) for the AFOTEC) remain on schedule path for the test. A certification briefing to the PEO is scheduled for 20 May 93.

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7c. (U) Program Highlights (Cont'd):

Negotiations on the Martin-Marietta contract for Granite Sentry were completed on 19 Feb 93. Contract was awarded on 7 Apr 93. Granite Sentry has become the first program to successfully transition software development from AFSPACECOM to AFMC.

8. (U) Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated 3 Sep 92) breaches or Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Granite Sentry Phase II	MAR 90	N/A	N/A
Granite Sentry (Phase III) (Missile & Space Wrng)	MAR 91	DEC 91	DEC 91(Ch-1)
SPADOC 4B IOC	APR 91	JUL 91	JUL 91
CSSR Tech Control & Message Processing	APR 91	N/A	N/A
Granite Sentry (Missile Wrng) IOC	N/A	DEC 91	DEC 91
Granite Sentry (NCC) IOC	N/A	DEC 91	DEC 91
Granite Sentry Phase IVA IOC	MAR 92	N/A	N/A
SCIS Installation/Checkout Complete	MAR 92	JUN 95	JUN 95
CCPDS-R Missile Warning (Common Subsystem) IOC	SEP 93	SEP 93	SEP 93
CSSR (Tech Control) IOC	N/A	N/A	N/A
CSSR Operational Date (Blck Tech Control)	N/A	SEP 93	SEP 93
Granite Sentry -- CSSR Interface	N/A	N/A	N/A
Granite Sentry Phase IVB	SEP 93	N/A	N/A
Granite Sentry Phase V	MAR 94	N/A	N/A
CSSR P3I	SEP 94	N/A	N/A
CSSR IOC	N/A	N/A	N/A
CSSR Installation Complete (APOC)	N/A	SEP 94	SEP 94
SCIS (Additional Media)	DEC 94	N/A	N/A
OPOC Missile Warning	DEC 94	N/A	N/A
CCPDS-R (SAC Force Management) IOC	DEC 94	DEC 94	DEC 94
Granite Sentry Phase VI IOC	MAR 95	N/A	N/A
Granite Sentry Completion	N/A	JUN 95	JUN 95(Ch-2)
SPADOC 4C IOC	SEP 95	SEP 95	SEP 95(Ch-3)
OPOC (Air Warning/OCP) IOC	DEC 95	N/A	N/A (Ch-4)
APOC (Air Warning/OCP) IOC	N/A	DEC 95	DEC 95
Systems of Systems IOT&E	DEC 95	DEC 95	DEC 95

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
CMJ FOC	N/A	DEC 95	DEC 95
System Turnover/PMRT	SEP 96	N/A	N/A (Ch-5)
SCIS IOC	N/A	NOV 95	NOV 95

ACRONYMS

APCC Alternative Processing and Correlation Center
CCP Command Center Processor
CCPDS-R Command Center Processing and Display System Replacement
CMJ Cheyenne Mountain Upgrade
CSSR Communications System Segment Replacement
NCC NORAD Command Center
OPCC Offutt Processing and Correlation Center
P3I Pre-Plan Product Improvement
SAC Strategic Air Command
SCIS Survivable Communication Integration System

b. (U) Previous Change Explanations --

Granite Sentry (Missile Warning) IOC and Granite Sentry (NCC) IOC completed IOT&E with no significant problems and entered Trial Period on schedule in Aug 91. During Trial Period, an operational concern with the control for system switchover during planned and unscheduled maintenance was discovered. The main cause was a lack of System Controller familiarity with Granite Sentry equipment. Granite Sentry Missile Warning and NCC reached IOC on 19 Dec 91. (System Control is a separate existing center in Cheyenne Mountain.)

The SCIS schedule rephasing contained in this change was planned for in our original DAB baseline (two years of internal schedule reserve were included). This slip, based on the poor contractor performance, was recognized in our baseline planning to include the necessary funding and time to resolve all interface issues. Due to an oversight on our part, this was not reflected in the DAB documentation. The replacement milestone to monitor is SCIS IOC.

c. (U) Current Change Explanations --

(Ch-1) Granite Sentry (Phase III) (Missile and Space Warning) changed from N/A to Dec 91 to reflect the actual date of completion.

(Ch-2) Granite Sentry Completion was adjusted from Nov 95 to Jun 95 due to negotiations with the prime contractor Martin Marietta Co.

9c. (U) Schedule (Cont'd):
(MMC). MMC's proposed schedule reflects Initial Operating Capability of Jun 95.

(Ch-3) SPADOC 4C IOC changed from Aug 95 to Sep 95. The 31 Dec 91 SAR reflected an administrative error. The SPADOC 4C IOC current estimate should have reflected Sep 95.

(Ch-4) OPCC has been renamed to APCC. The schedule information for OPCC (Air Warning/CCP) IOC will now be tracked under the milestone called APCC (Air Warning/CCP) IOC.

(Ch-5) CMU is an upgrade of an existing system. Under the new Air Force Material Command, System Turnover/PMRT is no longer required. Therefore, this item has been deleted from the APB.

d. (U) References --

(U) Development Estimate:
DAE approved APB dated 12 November 1989, Subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 03 September 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	71.7	85.0	74.3
Development (RDT&E)	(58.4)	(63.6)	(58.3)
Procurement	(13.3)	(21.4)	(16.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1581.0	1663.0	1646.4

b. (U) Quantity --

Development (RDT&E)	0	N/S	0
Procurement	1	1	1
Total	1	1	1

Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting pursuant to 10 USC 2433.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE approved APB dated 12 Nov 89, subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 03 September 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1646.4	1629.5	1646.4
(2) Quantity	1	1	1
(3) Unit Cost	1646.40	1629.50	1646.40

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1246.5	334.5	0.0	1581.0
Previous Changes:				
Economic	-7.2	-1.8	-	-9.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-17.3	-0.2	-	-17.5
Other	-	-	-	-
Support	-	+75.0	-	+75.0
Subtotal	-24.5	+73.0	-	+48.5
Current Changes:				
Economic	-8.7	-1.1	-	-9.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+1.5	-	-	+1.5
Estimating	+71.2	-28.4	-	+42.8
Other	-	-	-	-
Support	-	-17.6	-	-17.6
Subtotal	+64.0	-47.1	-	+16.9
Total Changes	+39.5	+25.9	-	+65.4
Current Estimate	1286.0	360.4	-	1646.4

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10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)	[redacted]			

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DAE approved APB dated 12 Nov 89, subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 03 September 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	1188.1	1230.4	1227.7
Procurement	321.2	347.6	344.4
Flyaway	(321.2)		(298.5)
Other Wpn Sys Cost	(0.0)		(12.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(33.3)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	1509.3	1578.0	1572.1

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	71.7	85.0	74.3
Development (RDT&E)	(58.4)	(63.6)	(58.3)
Procurement	(13.3)	(21.4)	(16.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1581.0	1663.0	1646.4
b. (U) Quantity --			
Development (RDT&E)	0	N/S	0
Procurement	1	1	1
Total	1	1	1

Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting pursuant to 10 USC 2433.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE approved APB dated 12 Nov 89, subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 03 September 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1646.4	1629.5	1646.4
(2) Quantity	1	1	1
(3) Unit Cost	1646.40	1629.50	1646.40

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	28.8	28.8	17.6
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	28.8	28.8	17.6
(2) Quantity	1	1	1
(3) Unit Cost	28.80	28.80	17.60

Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting pursuant to 10 USC 2433.

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13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1246.5	334.5	0.0	1581.0
Previous Changes:				
Economic	-7.2	-1.8	-	-9.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-17.3	-0.2	-	-17.5
Other	-	-	-	-
Support	-	+75.0	-	+75.0
Subtotal	-24.5	+73.0	-	+48.5
Current Changes:				
Economic	-8.7	-1.1	-	-9.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+1.5	-	-	+1.5
Estimating	+71.2	-28.4	-	+42.8
Other	-	-	-	-
Support	-	-17.6	-	-17.6
Subtotal	+64.0	-47.1	-	+16.9
Total Changes	+39.5	+25.9	-	+65.4
Current Estimate	1286.0	360.4	-	1646.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1188.1	321.2	0.0	1509.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-15.5	+0.6	-	-14.9
Other	-	-	-	-
Support	-	+59.1	-	+59.1
Subtotal	-15.5	+59.7	-	+44.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+1.3	-	-	+1.3
Estimating	+53.8	-23.3	-	+30.5
Other	-	-	-	-
Support	-	-13.2	-	-13.2
Subtotal	+55.1	-36.5	-	+18.6
Total Changes	+39.6	+23.2	-	+62.8
Current Estimate	1227.7	344.4	-	1572.1

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised economic escalation rates.
Estimating: Adjustment for prior and current year escalation. Congressional adjustments to FFRDC, CAAS, and Contract Travel; and budget reductions to Air Force Operation. Reduction to out-year funding for the Defense Business Operations Fund (DBOF).

Procurement
Economic: Revised economic escalation rates
Estimating: Adjustment for prior and current year escalation. Reduction to out-year funding for the Defense Business Operations Fund (DBOF).

13b. (U) Cost Variance Analysis (Cont'd):

Support: Additional funding for Initial Spares as stated in APB (Change 2), now in approval cycle and additional funding for Interim Contractor Support as we transition to AFMC, will be submitted in APB Change 3.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation rates (Economic)	N/A	-8.7
FY 92 increase for ECP for replacement of SPADOC Megatek Consoles (Engineering)	+1.3	+1.5
FY 92 transfer within CMU program element from ITW/AA (Estimating)	+0.7	+0.8
FY 93 General reductions for contractor travel, consultants, SBIR (Small Business Innovative Research), etc. (Estimating)	-7.5	-8.7
FY 94-97 President's Budget (Clinton Budget) adjustments (Estimating)	+60.6	+79.1
RDT&E Subtotal	+55.1	+64.0
(2) Procurement		
Revised economic escalation rates (Economic)	N/A	-1.1
Adjustment of data base to remove non-CMU program spares (Support)	-16.5	-21.6
Additional funding for Interim Contractor Support (ICS) (Support)	+3.3	+4.0
Adjustment of data base to remove AFSPACECOM and USSPACECOM procurements from the CMU budget (Estimating)	-23.3	-28.4
Procurement Subtotal	-36.5	-47.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1581.00	-18.80	--	--	1.50	25.30	--	57.40	65.40	1646.40

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --
(U) SCIS:
E - Systems, St. Petersburg, FL
F19628-86-C-0131, FPIF
Award: August 21, 1986
Definitized: August 21, 1986

Initial Contract Price		
Target	Ceiling	Qty
$26.9	$30.3	6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$97.3	$109.9	26	$105.0	$105.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-7.9	$-3.4
Cumulative Variances To Date (02/28/93)	$-11.3	$-0.1
Net Change	$-3.4	$3.3

Explanation of Change:

The previous Contract Price information was estimated based on latest information available. The net change contract target price ($-35.2M) and ceiling price ($-31.4M) was primarily due to the deletion of the requirement for SCIS to transmit over additional media such as Ground Wave Electronic Network (GWEN) and Air Force Satellite Command (AFSATCOM).

The cumulative cost and schedule variances to date are for the total program. The historical Tolerant variances (stop work order issued 9 Jul 91) are -$12.8 (cv) and $0.0 (sv). The current DEC variances are +$1.1 (cv) and -$0.2 (sv). The DEC cost and schedule variances are insignificant. The change is mainly due to the government receiving a credit for the cost of work deleted associated with the Tolerant effort.

15. (U) Contract Information (Cont'd):

(U) CCPDS-R:
TRW INC., Redondo Beach, CA
F19628-87-C-0047, FPIF
Award: June 3, 1987
Definitized: June 3, 1987

Initial Contract Price		
Target	Ceiling	Qty
$58.9	$64.3	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$173.2	$180.4	21	$175.2	$176.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.5	$-1.1
Cumulative Variances To Date (03/05/93)	$-2.7	$-2.0
Net Change	$-0.2	$-0.9

Explanation of Change:

Cost and schedule variances are insignificant. No impact on program.

(U) SPADOC-4C:
Loral Aerospace Corp, Colorado Springs, CO
F19628-91-C-0169, CPIF
Award: October 25, 1991
Definitized: October 25, 1991

Initial Contract Price		
Target	Ceiling	Qty
$57.1	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$58.0	N/A	1	$58.0	$58.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.1	$-0.2
Cumulative Variances To Date (02/19/93)	$3.6	$-0.1
Net Change	$3.5	$0.1

Explanation of Change:

Contractor's estimated price at completion increased as a result of incorporating ECP 169 (Megatek Console Replacement) into the contract.

Cost variance is the result of manpower efficiencies and activities requiring fewer resources than originally anticipated. A decrease in the indirect rate in Jul 92 and Feb 93 were also a contributing factor.

15. (U) Contract Information (Cont'd):

Price and variance data for this contract are for Block C only and have no negative impact on program.

(U) CSSR Subset AOC #2:	Initial Contract Price Target	Ceiling	Qty
GTE Government Sys Corp, Needham Heights, MA F19628-92-C-0046, CPIF Award: January 28, 1992 Definitized: July 24, 1992	$21.1	N/A	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$21.1	N/A	1	$21.1	$21.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$1.2	$-0.2
Cumulative Variances To Date (02/26/93)	$1.4	$-0.3
Net Change	$0.2	$-0.1

Explanation of Change:

Cost and schedule variances are insignificant. No program impact.

(U) CSSR Blk II:	Initial Contract Price Target	Ceiling	Qty
GTE Government Systems, Needham Heights, MA F19628-84-C-0063, FPIF Award: N/A Definitized: June 8, 1984	$119.8	$136.0	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$141.8	$160.9	1	$125.8	$125.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.3	$-0.2
Cumulative Variances To Date (02/22/93)	$0.2	$-0.2
Net Change	$2.5	$0.0

Explanation of Change: None.

This contract is 90% complete. This the final time this contract will be reported in the SAR.

CMU, December 31, 1992

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 72.7% (16 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 81.6% ($1344.0 / $1646.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1036.2	131.1	85.6	33.1	1286.0
Procurement	307.8	17.6	7.7	27.3	360.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1344.0	148.7	93.3	60.4	1646.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1978				4.7	2.6	2.6	2.6	6.9
1979				3.6	2.2	2.2	2.2	8.3
1980				3.7	2.5	2.5	2.5	9.4
1981				3.9	2.9	2.9	2.9	12.0
1982				11.0	8.8	8.8	8.8	9.2
1983				26.3	22.0	22.0	22.0	4.8

CMJ, December 31, 1992

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1984				63.5	55.3	55.3	54.4	3.9
1985				61.2	55.1	55.1	55.1	3.4
1986				100.7	92.8	92.8	92.7	2.7
1987				95.3	91.9	91.9	91.7	2.8
1988				111.4	110.8	110.8	110.6	3.0
1989				115.2	118.4	118.4	115.2	4.2
1990				97.2	103.9	103.9	98.2	4.0
1991				95.9	106.3	106.3	95.3	4.3
1992				105.6	119.9	119.6	100.9	2.8
1993				121.2	140.8	102.6	13.4	2.4
1994				110.3	131.1			2.4
1995				70.4	85.6			2.3
1996				26.1	32.5			2.3
1997				0.5	0.6			2.2
Subtot				1227.7	1286.0	997.7	868.5	

Obligation and expenditure data reflect program office records as of 30 March 1993.

CMU, December 31, 1992

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3080 Other Procurement, Air Force								
1982			1.0	1.0	0.8	0.8	0.8	9.2
1983			23.0	23.1	20.1	20.1	20.1	4.8
1984			26.9	26.9	24.1	24.1	24.1	3.9
1985			42.4	42.4	39.2	39.2	39.2	3.4
1986			50.9	50.9	49.1	49.1	48.9	2.7
1987			17.5	17.5	17.5	17.5	17.5	2.8
1988			18.0	18.0	18.7	18.7	15.2	3.0
1989			37.7	37.7	40.5	40.5	21.9	4.2
1990			36.4	36.4	40.3	40.3	32.9	4.0
1991			6.3	6.3	7.1	7.1	6.8	4.3
1992			14.6	18.5	21.6	19.7	10.5	2.8
1993	1		11.9	24.1	28.8	8.4	1.3	2.4
1994			11.9	14.4	17.6			2.4
1995				6.2	7.7			2.3
1996				11.4	14.6			2.3
1997				4.7	6.1			2.3
1998				3.6	4.8			2.2
1999				1.3	1.8			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

Subtot	1		298.5	344.4	360.4	285.5	239.2	
Grand Total	1		298.5	1572.1	1646.4	1283.2	1107.7	

Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting pursuant to 10 USC 2433. Quantity will always be carried in the current year.

Obligation and expenditure data reflect program office records as of 30 March 1993.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Production information is not more than six or more in any two years. Therefore, production information is not required.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		17.6		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		7.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		27.3		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

SOURCE: All the information provided in Paragraphs 18a and 18b are from the Cheyenne Mountain Upgrade Independent Cost Estimate (ICE) Single Best Estimate (SBE) dated 9 Jul 92.

Operations Concept - At Full Operating Capability (FOC), Air Force Space Command (AFSPACECOM) will take over complete day-to-day operating responsibility to perform the mission. Each operational center has five crews to support the 24 hour mission.

Maintenance Concept - AFSPACECOM will have responsibility for maintenance of application software using both organic manpower and contract support. Commercial Off-the-Shelf (COTS) hardware and COTS system software will have a two-level maintenance concept. AFSPACECOM will have responsibility for organizational level hardware maintenance. Air Force Materiel Command (AFMC) will have responsibility for depot level maintenance of COTS hardware and COTS system software with vendor support for repair of COTS hardware and system software.

18a. (U) Operating and Support Costs (Cont'd):

There are significant differences between the cost element structure of the 1990 and 1991 SARs and this SAR. The changes in the 1992 CMU ICE SBE cost element structure were directed by the Air Force Cost Analysis Agency (AFCAA/FMC) to conform with the current cost element structure in the "Operating and Support (O&S) Cost Estimating Guide" developed by the Office Of The Secretary of Defense Cost Analysis Improvement Group dated 1 Aug 91. Due to this change it became impossible to track between the 1989 CMU ICE SBE and the 1992 CMU ICE SBE.

The following is a comprehensive list of ground rules and assumptions used in the Cheyenne Mountain Upgrade (CMU) program O&S Single Best Estimate (SBE).

a. The ICE SBE was performed in constant FY 92 dollars.

b. The Operating & Support (O&S) period covers phase-in (Dual Ops Period) to Full Operational Capability (FOC) (Dec 1995) plus 15 steady state years.

c. The 14 Feb 92 SAF/FMCE raw and weighted inflation factors were used. The raw rates were used when adjusting dollars between base years. The weighted rates were applied when then year dollars were calculated.

d. Cost for FY 95 was phased in based on the program's FOC date.

e. CMU operations, computer operations, hardware and software maintenance personnel types and specialties were drawn from the FY 89 baseline plus those on approved POMs since the FY 89 baseline.

f. Manpower increases during the dual ops period are required to support the dual operation period between switch on of the CMU new and the switch off of the old CMC replaced systems.

g. Although Canadian Forces are on staff/duty within one or more CMU programs, they were not included in the manpower estimates as their expenses are paid by the Canadian government.

h. All training costs prior to and after FOC are included in the estimate.

i. Any specialized training required by the Canadian personnel was included in the training cost element.

j. Only recurring costs for Long Haul Communications were included in the estimate.

18a. (U) Operating and Support Costs (Cont'd):

k. Initial Spares will be estimated but not included in the CMU program SBE totals, only provided to ESC/FMCE.

l. Hardware and software upgrades or replacements due to projected obsolescence and technological breakthroughs are included in the O&S SBE. Although current plans do not include hardware and software upgrades and replacements in the O&S period, they have been included in the estimate under modification kit procurement/installation.

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost For CMU Steady State	Avg. Annual Cost For Antecedent
Mission Personnel	34.8	N/A
Unit Level Consumption	34.7	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	1.6	N/A
Contractor Support	4.7	N/A
Personnel Support	11.8	N/A
Sustaining Support	13.7	N/A
	0.0	N/A
Total	101.3	N/A

The antecedent system, CMC, is only being upgraded and not being replaced in total. The O&S cost for the CMC is captured for the entire complex and not definitized to the level of the replaced systems. Therefore, the antecedent average annual cost is not available.

There are significant differences between the cost element structure of the 1990 and 1991 SARs and this SAR. The changes in the 1992 CMU ICE SBE cost element structure were directed by the Air Force Cost Analysis Agency (AFCAA/FMC). The changes were made so the cost elements would conform with the cost element structure in the "Operating and Support Cost Estimating Guide" developed by the Office of the Secretary of Defense Cost Analysis Improvement Group dated

18b. (U) Operating and Support Costs (Cont'd):

1 Aug 91.

The 1990 and 1991 SARs were based on the 1989 CMU ICE SBE. The 1989 CMU ICE SBE captured only Operating and Support from FOC out, therefore showing no Contractor Support Cost prior to FY94 on the 1991 SAR. The 1992 SAR is based on the 1992 CMU ICE SBE. The 1992 CMU ICE SBE period covers Operating and Support cost from phase-in (Dual Ops Period) to Full Operational Capability (FOC) (Dec 1995) plus 15 steady state years. Due to changes, it has become impossible to track between the 1989 and 1992 CMU ICE SBE as well as the 1991 and 1992 SARs.

c. (U) Contractor Support Costs -- None.

The Contractor Support costs are a combination of both the Contract Services under Unit Level Consumption cost element and Contractor Logistic Support under the Contractor Support cost element.

All contractor support costs were grouped into the O&M category. There may have been some industrial fund contractor support; however, it is imbedded in the sales rate and not identifiable to the Cheyenne Mountain Upgrade O&S.

AF-4 AWACS RSIP

~~SECRET~~

SELECTED ACQUISITION REPORT (SCS:DD-COMP(QSA)823)
PROGRAM: AWACS RSIP

AS OF DATE: December 31, 1992

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CLEARED
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AS AMENDED
MAY 20 1993 10
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
E-3 AWACS Radar System Improvement Program (RSIP)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
ESC/AW
3 EGLIN STREET
HANSCOM AFB, MA 01731-2115
COL BERWYN A. REITER
Assigned: July 28, 1992
AV 478-6899 COMM (617) 377-6899

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0207417F (Shared) Project 64411L (Shared)
PROCUREMENT:
APPN 3010 ICN 11411L (Air Force)

93 543

[redacted]

SAF/PAS
93-332 - T

[redacted]

~~SECRET~~

5. (U) Related Programs:
E-3 Airborne Warning and Control System (AWACS)

6. (U) Mission and Description:
The purpose of the Radar System Improvement Program (RSIP) modification is to provide the Air Combat Command (ACC) with new and improved capabilities for the E-3 Airborne Warning and Control System (AWACS) radar. The AWACS RSIP will provide improvements in radar sensitivity/electronic counter-countermeasures (ECCM) performance, radar performance monitoring and control, and reliability/maintainability (R&M) to maintain system effectiveness against the projected operational environment of the 1990's and into the next century.

RSIP is made up of three phases: 1) System Definition/Risk Reduction (Pre-Engineering and Manufacturing Development), 2) Engineering and Manufacturing Development (EMD), and 3) Production Modification. This program will result in hardware and software changes to the AWACS.

The modifications are primarily to the AWACS Surveillance Radar Functional Group (SRFG) which include:

(1) Replacement of the existing Radar Data Correlator (RDC) and Digital Doppler Processor (DDP) with the Surveillance Radar Computer (SRC).

(2) Modify the existing Radar Control Maintenance Panel (RCMP) with dual CRT displays and a new keyboard and cursor control.

(3) Minor redesigns of the receiver, the Stable Local Oscillator (STALO), the Synchronizer, and the antenna phase control electronics, and replacement of the analog to digital converter.

(4) Replacement of the existing Surveillance Radar Computer Program (SRCP) with a new SRCP.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The AFSARC review and approval to start EMD occurred in December 1988: $626M (TY$) approved for total program (RDT&E and Production). EMD contracts with Boeing and Westinghouse were awarded on 25 September 1989. Two prime contracts were awarded to accomplish the RSIP effort: one with Westinghouse Electric Corporation for the radar upgrade and one with The Boeing Company for the system integration and testing of the radar in the aircraft. Westinghouse is responsible for Total Radar Set Performance Responsibility (TRSPR) for the design, development, demonstration, and delivery of the E-3 Radar set (B-Kit) that meets specified performance during flight. Boeing has assumed Total System Performance Responsibility (TSPR) for the A-kit design and integration of the new radar on the E-3 by providing system performance which meets Government requirements. The RSIP acquisition schedule is intended to maximize concurrent installation with the Block 30/35 retrofit.

7a. (U) Program Highlights (Cont'd):

Six (6) Brassboard flight tests on Test-System-3 (TS-3) were conducted during February and March 1990 successfully demonstrating the RSIP pulse compression waveform concept. The System Design Review was held in February 1990 for both the Westinghouse and Boeing contracts. The RSIP TEMP was approved by OSD on 4 April 1990. The Software Specification Review was held incrementally in April and May 1990. The Radar Data Processor (RDP) initial software bench prototype was delivered by subcontractor Control Data Corporation (CDC) to Westinghouse in May 1990. The radar algorithm simulations were first integrated in June of 1990 confirming the viability of the RSIP two-slant signal processing technique. The Hardware Preliminary Design Review (PDR) was conducted in August 1990. NATO began observing the monthly US RSIP Program Management Reviews in September 1990 to facilitate their potential future participation in the RSIP EMD effort. The Radar Control Maintenance Panel (RCMP) Flat Panel Display Terminal (FPDT) subcontractor could not meet technical requirements using Electroluminescent technology. In November 1990, the decision was made to use a monochromatic cathode ray tube display design. The Software PDR was successfully conducted in December 1990.

Preliminary Design Review (PDR) on the Radar Control and Maintenance Panel (RCMP) was conducted at Westinghouse in January 1991. Hardware Critical Design Review (CDR) less RCMP was conducted at Westinghouse in January 1991. RSIP Brassboard Data Gathering Flight tests were conducted on TS-3 in January - March 1991. The "Ad Referendum" case directive for NATO's twelve month interim participation in the RSIP effort was approved in February 1991 for $18.0M. The form-fit-function version of the Radar Data Processor (Software Bench) was delivered in March 1991 from subcontractor Control Data Corporation (CDC) to Westinghouse. The NATO RSIP effort was presented at the ESD Program Start Review in April 1991 and was approved to proceed toward Acquisition Strategy Panel.

Boeing Group A Software and Hardware CDRs were satisfactorily conducted in April and May 1991 respectively. The RCMP hardware CDR was held in July 1991. RCMP Demonstration #1 in July successfully demonstrated the RCMP graphics display executive and its interfaces. The annual RSIP Test & Evaluation Master Plan (TEMP) review with AFOTEC was held in August 1991 at Eglin AFB. The RCMP software CDR was held in August 1991. The Dynamic User-System Interface (USI) demonstration in August 1991 demonstrated how targets would appear on the plan-position indicator (PPI) and fast fourier transform (FFT) displays. The RDP hardware bench was accepted by Westinghouse in August 1991. The RSIP Program Office successfully held Software CDR in September 1991 and it was a model presentation of the final software design. The first prototype displays for the RCMP were delivered in October 1991. This was followed by the first keyboard and trackball for the RCMP in November 1991. RDP Kit #1 was

7a. (U) Program Highlights (Cont'd):

delivered in December 1991 by subcontractor CDC in time to support the planned delivery of SRC Kit #1 in January 1992. In December 1991 the RSIP Program Office awarded a Letter Contract to Westinghouse for NATO Phase I effort; total $19.4M.

b. (U) Significant Developments Since Last Report --
In early March 1992, the SPO directed the Boeing Company to resequence and reschedule their planned hardware and software integration to be consistent with a revised estimate of the Westinghouse software delivery schedule.

On 18 March 1992 the third prototype Radar Data Processor was delivered to Westinghouse.

Westinghouse did not conduct the critical 8.6dB ground radar sensitivity test on schedule date of 25 March 1992. The Government took action to minimize the delay impact on the associate contract by directing a delayed Boeing start-up of AIL and TS-3 kit integration. This action effectively kept Boeing from ramping up to a high monthly burn rate earlier than needed.

On 10 April 1992 Westinghouse held the first tangible evidence of software success by conducting the Surveillance Radar Computer Software Demo #1 for the RSIP modified radar. Plans for upgrades to the build required for the 8.6 dB Demo were firmed up at this time.

Also on 10 April 1992, Westinghouse completed the installation of the hardware parts for Radar Kit #1 (this Kit was short five items on the original due date). Revised deliveries for Kit #2 and #3 parts continued in May and June 1992.

On 22 April 1992 Boeing successfully demonstrated the Airborne Operational Computer Program Software that uses the output of the new RSIP radar set. Although this Jovial software update is small in comparison with the Westinghouse Ada software builds, the test results further reduce the integration risk to achieving a successful RSIP radar change.

On 7 May 1992 the NATO/RSIP Cooperative International R&D Agreement was signed in Washington, DC.

In September 1992 Boeing completed development of the Group A kit and Westinghouse completed development of the Group B kit slated for the Avionics Integration Laboratory (AIL) at Boeing. Installation should have begun on 3 August 1992, but was placed on hold by the government as Westinghouse had not complied with contract requirements for kit software. Boeing was on track to complete AIL baselining tests when directed to reschedule their installation activity.

In September 1992 Radar Data Processor (RDP) number 4 and 5 went through Acceptance Test Procedure (ATP) at Computing Devices International (CDII) (formerly CDC).

In September 1992 informal walkthroughs of test cases for Radar

7b. (U) Program Highlights (Cont'd):

Control and Maintenance Panel (RCMP) Demonstration 2 were held.

On 15 September 1992 the 8.6 dB Lab Radar Demo was successfully completed. Westinghouse delivered their test report in October 1992 and the government has verified test results showing a 10.34 dB improvement.

In October 1992, an Independent Assessment Team of contractor and government representatives studied the processes, procedures and personnel on the RSIP Westinghouse contract. Their conclusion was that there were no technical "Show Stoppers". They did observe a need for further programmatic and process improvements and noted that potentially serious software sizing and timing problems would require further management attention.

On 20 November 1992 the Fixed Price Determination for NATO RSIP Phase II was approved by OUSD(A). (NATO Phase II is for installation, check-out and test of the NATO Group A and B kits in a NATO E-3 aircraft.)

On 3 December 1992 all Action Items were closed from the Software Critical Design Review (CDR) allowing full closure of all software design reviews.

In December 1992 ECP 1000-02 was successfully negotiated to re-establish the RSIP hardware baseline. Distribution of the contract modification for this ECP allowed for the remaining hardware CDR (RCMP) and the 8.6 dB Demonstration contract line item to be closed.

Westinghouse and Boeing contracts were modified in December 92 to allow continued NATO Program Management Agency (NAPMA) attendance at on-site program reviews/meetings/demonstrations.

This system is expected to satisfy its mission requirements.

c. (U) Changes Since As Of Date --

On 15 January 1993, awarded the NATO RSIP Boeing Phase I letter contract; (Boeing Phase I is for a NATO Group A kit and development of NATO ACCP software.)

Also on 15 January 1993, Boeing began Group A modifications in the Avionics Integration Laboratory (AIL). These modifications were completed on 20 January 1993, two weeks earlier than planned.

On 25 February 1993, the Program Office issued the definitized contract modification for NATO RSIP Westinghouse Phase I.

On 31 March 1993, the United Kingdom (UK) signed a Letter of Offer and Acceptance (LOA) to conduct a $5.6M pre-production study aimed towards incorporating Production RSIP Kits into the fleet of seven (7) UK E-3D AWACS aircraft.

8. (U) Threshold Breaches:

There are schedule breaches to the Acquisition Program Baseline (APB) (dated 8 Aug 91). A Program Deviation Report for the APB breaches

8. (U) Threshold Breaches (Cont'd):

has been submitted.
There is a Nunn-McCurdy unit cost breach of 22.3%. Details of the unit cost breach are provided in section 12.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone II AFSARC	DEC 88	DEC 88	DEC 88
FSD Contract Award	SEP 89	N/A	SEP 89
Brassboard Flight Tests	APR 91	APR 91	MAR 91
System Design Review	FEB 90	FEB 90	FEB 90
Critical Design Review	JAN 91	SEP 91	SEP 91
Test System-3 (TS-3) IC&O	SEP 92	SEP 92	OCT 93(Ch-1)
Advance Procurement Authorization	JUN 93	JUN 93	N/A
Flight Test DT&E			
Start	N/A	JUN 93	FEB 94(Ch-2)
Complete	SEP 93	SEP 93	NOV 94(Ch-3)
IOT&E			
Start	N/A	DEC 93	MAY 95(Ch-4)
Complete	DEC 93	MAR 94	SEP 95(Ch-5)
Physical Configuration Audit	DEC 93	DEC 93	SEP 95(Ch-6)
Production Decision	MAR 94	MAR 94	OCT 95(Ch-7)
Trial Installation	SEP 95	SEP 95	SEP 97(Ch-8)
IOC (4 aircraft)	SEP 96	SEP 96	JAN 99(Ch-9)
Long Lead Procurement	N/A	N/A	N/A (Ch-10)

Note: Test System-3 (TS-3) IC&O should read TS-3 I&CO (TS-3 Installation & Check Out (I&CO)).

b. (U) Previous Change Explanations --

The Dec 90 SAR reported a planned CDR completion date of May 91 which was based on holding the SRC CDR in Jan 91 and the RCMP and Software CDRs in May 91 due to delayed completion of software requirements analysis and software documentation and design change to cathode ray tube displays.

The Dec 90 SAR reflected an Air Force decision to await the completion of qualification testing before initializing procurement actions and so Advance Procurement Authorization was dropped in June 93 in favor of Long Lead Procurement in Nov 93.

The Dec 91 SAR reported that Critical Design Review (CDR) was conducted incrementally: SRC hardware CDR was held Jan 91, RCMP CDR held in Jul - Aug 91, and Software CDR was held in Sep 91. Change to

9b. (U) Schedule (Cont'd):
cathode ray tube display design delayed ROMP CDR. Software CDR delayed to complete software requirements analysis and software documentation. The software delay caused at that time an anticipated delay in TS-3 I&CO, Flight Test DT&E, IOT&E, Phyical Configuration Audit (PCA), Production decision and Trial Installation.

c. (U) Current Change Explanations --

(Ch-1) TS-3 I&CO: (Changed from (Dec 91 SAR Current Estimate) Dec 92 to Oct 93) Complete date is due to Westinghouse being unable to develop/integrate software at the rate anticipated at Critical Design Review (CDR).
(Ch-2) Flight Test DT&E start: (from Jun 93 to Feb 94) Originally meant start of Flight Qualification Testing. Now it has been changed to be the first flight. Start has been delayed by TS-3 I&CO.
(Ch-3) Flight Test DT&E complete: (from Dec 93 to Nov 94) Completion of DT&E has been delayed by TS-3 I&CO.
(Ch-4) IOT&E start: (from Dec 93 to May 95) IOT&E Flights are planned to begin two months after start of FCA. FCA is scheduled to begin four months after the last DT&E flight to allow for flight data reduction and report approval.
(Ch-5) IOT&E complete: (from Mar 94 to Sep 95) Reference comments in Change-4.
(Ch-6) PCA: (from May 94 to Sep 95) PCA is planned to begin two months after start of FCA when critical FCA action items are closed. The milestone is meant to be met once the final PCA session is complete, not when all action items are complete.
(Ch-7) Production Decision: (from Jun 94 to Oct 95) All Production and IOC milestones breached due to a two year production slip directed by the FY 94 President's Budget. The Production Decision LRIP approval slipped to match FY 96 start.
(Ch-8) Trial Installation: (from Dec 95 to Sep 97) Reference comments in Change-7. Trial Installation is eighteen months after Production start.
(Ch-9) IOC (4 aircraft): (from Sep 96 to Jan 99) Change acronym IOC to RAA (Required Assets Available) Reference comments in Change-8. RAA is 36 months after Production Lot 1 award.
(Ch-10) Long Lead Procurement: (from Nov 93 to N/A) Delete Long Lead Procurement.

d. (U) References --

(U) Development Estimate:
FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 August 1991.

10. (U) Performance Characteristics:

a. (U) Performance --

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

Notes:

1/ To be verified by analysis of data taken during FSD testing.
2/ For RSIP, Mean Repair Time equals MTTR. Time starts when

10a. (U) Performance Characteristics (Cont'd):
access to equipment is obtained. See ESD Readiness Improvement through Systems Engineering Handbook, Page 1-9, paragraph 6.1.2.e.
3/ Using built-in test equipment only.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 August 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	349.7	367.9	377.0
Procurement	222.1	207.2	320.6
Flyaway	(175.1)		(238.1)
Other Weapon Systems	(29.4)		(69.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(17.6)		(12.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	571.8	575.1	697.6
Escalation	118.1	77.7	169.1
Development (RDT&E)	(47.0)	(38.6)	(48.5)
Procurement	(71.1)	(39.1)	(120.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	689.9	652.8	866.7
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	34	34	34
Total	34	34	34

Development: Excludes 5 RDT&E units which are not fully configured end items.

11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs -- The RSIP Memorandum of Agreement (MOA) between the USAF and the NATO AEW&C Program Management Organization (NAPMO), signed on 7 May 1992, sets forth the terms for the RSIP Cooperative Development Program. We have modified the two existing U.S. RSIP FPIF contracts with Boeing and Westinghouse for the NATO RSIP Phase I effort and plan to add the Phase II efforts to the same contracts. During Phase I Westinghouse is providing one more RSIP Group B radar set and instrumentation for the NATO E-3A aircraft. Boeing Phase I effort is providing one RSIP Group A Kit and the NATO Airborne Operational Computer Program (AOCP) software. In Phase II, Westinghouse will develop the logistics support for the RSIP hardware and software components and support Boeing during the test program; Boeing will install and integrate the RSIP prototype Group A and B kits into the NATO E-3A test aircraft and conduct the test program. The AWACS SPO is in the process of assessing alternative approaches to reducing cost through a restructuring of the joint test program. NATO continues to study the feasibility of several additional radar improvements which they may propose to add to the USAF RSIP core effort. If implemented, these NATO unique requirements will be funded 100% by NATO and will be developed in parallel with USAF RSIP core development efforts. The RSIP Program Office expects NATO to buy kits for all 18 NATO aircraft. Several acquisition profiles with corresponding costs are being evaluated by NATO.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 08 August 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	866.7	708.6	866.7
(2) Quantity	34	34	34
(3) Unit Cost	25.491	20.841	25.491

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY89$)	697.6	585.1	697.6
(2) Unit Cost	20.518	17.209	20.518

d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY89$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Unit Cost	N/A	N/A	N/A

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	4.650	22.31
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	0	N/A
(4) PAUC (BY89$)	3.309	19.23
(5) CPUC (BY89$)	0.000	N/A

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	4.650	22.31
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	34	N/A
(4) PAUC (BY89$)	3.700	22.00
(5) CPUC (BY89$)	0.000	N/A

g. (U) Initial SAR (DEC 89)

(1) Program Acquisition Cost (TY$) --	689.9
(2) Program Acquisition Cost (BY$) --	571.8

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

h. (U) Unit Cost Changes.

(1) (U) PAUC --

E-3 AWACS RSIP has breached its current unit cost reporting baseline.

A primary cause of this breach is a two year slip in the start of production and a four year slip to completion of the production portion of the program as reflected in FY94 PB.

(2) (U) CPUC -- None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

There is a schedule breach for all milestones starting with Test System-3 (TS-3) Installation and Check-out (I&CO) complete. This is due to associate contractor Westinghouse not being able to develop/integrate software at the rate anticipated at Critical Design Review (CDR). The FY 94 Amended President's Budget reflects a two year production slip to all production and IOC milestones.

j. (U) Program Management and Control.

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k. (U) Cost Control Actions.

The Program Office is pursuing several initiatives to minimize production costs. A manufacturing team is conducting on-going cost

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd): reduction studies. Also, concurrent production schedules are being structured with the NATO program in order to minimize cost.

1. (U) Contract Information (In Millions of Then-Year Dollars) —

(U) (1) Contractor(s): Westinghouse Electric Cor
(2) Contract Title: AWACS RSIP (Group B Kit)
(3) Contract Number:F19628-89-C-0138
(4) Actual Cost of Work Performed (ACWP) to date: 219.7
(5) Percent contract completed (BCWP/target cost): 83.56
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-25.2/-21.37%	$-8.1/-6.45%
Previous SAR	N/A	N/A
Current values	$-41.5/-23.30%	$-6.1/-3.29%
Change from the baseline SAR	$-16.3/-1.93%	$+2.0/+3.16%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

Cost Variance: The negative variance is primarily the result of recapturing the Radar Data Processor Operational Software Build schedule, change to the Cathode Ray Tube for the Radar Control Display Unit, increase manning for Computer Programs tasks and analysis of Brassboard Testing.
Schedule Variance: Reflects a slip in schedule that is primarily due to the Radar Data Processor (RDP) Operational software and RDP subcontractor effort.

(8) (U) Impact of Variances on Contract. -

At this point in time large negative cost variances mean that Westinghouse has expended far more than it expected. The Westinghouse Latest Revised Estimate At Completion (LREAC) of $272.0M is approximately at contract ceiling price of $272.2M. The combination of higher than expected expenditures, a LREAC at ceiling value, a progress payment withhold for failure to make adequate progress toward contract milestones and implemenation of a loss-ratio has negatively impacted Westinghouse cash flow on the RSIP contract.

(9) (U) Impact of Variances on Unit Costs. - None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

(U) (1) Contractor(s): The Boeing Company
(2) Contract Title: AWACS RSIP (Group A Kit)
(3) Contract Number:F19628-89-C-0139
(4) Actual Cost of Work Performed (ACWP) to date: 32.9
(5) Percent contract completed (BCWP/target cost): 50.62
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-0.2/-2.27%	$-0.4/-0.93%
Previous SAR	N/A	N/A
Current values	$-2.4/-7.90%	$-1.4/-4.29%
Change from the baseline SAR	$-2.2/-5.63%	$-1.0/-3.36%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

Cost and schedule variances are being impacted by the further five month schedule slip in start of Avionics Integration Laboratory (AIL) and TS-3 I&CO milestones. At this point in time CCP 4857R1 titled "RSIP Program Reschedule Restructure" (NTE $11M) has not been incorporated into the Boeing baseline.

(8) (U) Impact of Variances on Contract. -

The variances do not impact the contract.

(9) (U) Impact of Variances on Unit Costs. -

The variances do not impact the unit cost.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	396.7	293.2	0.0	689.9
Previous Changes:				
Economic	-3.9	-2.8	-	-6.7
Quantity	-	-	-	-
Schedule	-3.0	+6.9	-	+3.9
Engineering	+2.3	-	-	+2.3
Estimating	+8.0	+16.5	-	+24.5
Other	-	-	-	-
Support	-	-5.3	-	-5.3
Subtotal	+3.4	+15.3	-	+18.7
Current Changes:				
Economic	-1.1	-31.0	-	-32.1
Quantity	-	-	-	-
Schedule	+51.4	+80.0	-	+131.4
Engineering	-79.0	-	-	-79.0
Estimating	+54.1	+24.5	-	+78.6
Other	-	-	-	-
Support	-	+59.2	-	+59.2
Subtotal	+25.4	+132.7	-	+158.1
Total Changes	+28.8	+148.0	-	+176.8
Current Estimate	425.5	441.2	-	866.7

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	349.7	222.1	0.0	571.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-2.0	+1.0	-	-1.0
Engineering	+1.4	-	-	+1.4
Estimating	+8.8	+11.6	-	+20.4
Other	-	-	-	-
Support	-	-7.5	-	-7.5
Subtotal	+8.2	+5.1	-	+13.3
Current Changes:				
Quantity	-	-	-	-
Schedule	+34.1	+34.2	-	+68.3
Engineering	-63.4	-	-	-63.4
Estimating	+48.4	+16.2	-	+64.6
Other	-	-	-	-
Support	-	+43.0	-	+43.0
Subtotal	+19.1	+93.4	-	+112.5
Total Changes	+27.3	+98.5	-	+125.8
Current Estimate	377.0	320.6	-	697.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Schedule: Revised buy and delivery schedule.

Engineering: Depot Activation costs transferred to RDT&E funding (FY 92-93) from Procurement funding (FY93). Depot development descope. FY 91 Congressional reduction; Must be covered by NATO funding.

Estimating: Current and prior years inflation offset. Funded an Unfunded Requirement to cover contract termination liability requirements. Revised Program estimate of program requirements. Internal AWACS reallocation between mod projects used to cover contract termination liability. RSIP portion of

13b. (U) Cost Variance Analysis (Cont'd):
AWACS Desert Storm assessment.

Procurement

Economic:	Revised economic escalation indices.
Schedule:	Revised production schedule to allow completion of qualification testing.
Estimating:	Transfer of Installation costs to Procurement from O&M. Revised estimate of Group A/B Kits. Correction of categorization in Dec 90 SAR for Group A/B Kits.
Support:	Depot Activation costs (FY 93) transferred to RDT&E funding (FY92-93). Initial Spares funding reduced. Support estimate updated (Data, Support Equip, Sim/Trainers costs increased). Correction of categorization in Dec 90 SAR for other support costs. Revised Initial Spares requirement. Revised funding estimate for modifications to simulator/trainers and data.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-1.1
Stretched FY 1989-94 program through FY 1996. (Schedule)	+34.1	+51.4
Adjustment for current and prior year inflation (Estimating)	+0.4	+0.4
Revised estimate of engineering change orders. (Estimating)	+36.2	+40.5
Revised estimate of program office support requirements. (Estimating)	+9.0	+10.1
Estimating changes based on more current data. (Estimating)	+2.8	+3.1
Specification changes to existing contracts. (Engineering)	+4.0	+4.7
Reduction of US program due to NATO share of development cost. (Engineering)	-67.4	-83.7
RDT&E Subtotal	+19.1	+25.4
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-31.0

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Slip in program start from FY 94 to FY 96 (prod. break & econ. esc. affect incl.) & completion from FY 98 to FY 02. (Schedule)	+34.2	+80.0
Revised estimate of Group A kits based on EMD actuals (Estimating)	+0.6	+1.0
Revised estimate of Group B kits based on EMD actuals. (Estimating)	+2.6	+4.3
Revised estimate of installation based on install hours and labor hourly rate increase. (Estimating)	+5.3	+8.2
Revised estimate of non-recurring requirements. (Estimating)	+7.7	+11.0
Additional PSE requirements. (Support)	+1.3	+1.7
Estimate revised. (Support)	+0.3	+0.4
SPO Support (Support)	+20.0	+27.9
Additional requirement for Avionics Integration Support Facility. (Support)	+17.6	+25.8
Additional requirements for Commodity Mod Kits. (Support)	+5.9	+7.3
Additional requirement for Interium Contractor Support (Support)	+1.2	+1.6
Revised estimate for Initial Spares. (Support)	-3.3	-5.5
Procurement Subtotal	+93.4	+132.7

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
20.291	-1.141	0.001	3.979	-2.256	3.032	--	1.585	5.200	25.491

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) AWACS RSIP (Group B Kit):	Initial Contract Price Target	Ceiling	Qty
Westinghouse Electric Cor, Baltimore, MD F19628-89-C-0138, FPIF Award: September 25, 1989 Definitized: September 25, 1989	$223.6	$251.8	5

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$242.4	$272.2	6	$272.0	$295.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-25.2	$-8.1
Cumulative Variances To Date (02/21/93)	$-41.5	$-6.1
Net Change	$-16.3	$2.0

Explanation of Change:

The net change of $2.0M favorable Schedule Variance is due to the fact that as of February 1993 the Westinghouse negotiated contract was 84.4% complete. The net change of $16.3M unfavorable cost variance reflects a cost overrun which is primarily attributed to recapturing the RDP Operational Software build schedule, change to the Cathode Ray Tube for the Radar Control Display Unit, increase manning to support late milestones such as Critical Design Review and analysis of Brassboard Testing. Neither the schedule nor the cost variance impacts the RSIP program.

The additional sixth Kit and as a result subsequent increase to Target of $17.2M and Ceiling Price of $18.6M is attributed to NATO Phase I effort. The remaining increase to Target Price is due to Security Guide of $0.8M (Ceiling $0.8M) and DT&E Test Changes of $0.8M (Ceiling $1.0M).

(U) AWACS RSIP (Group A Kit):	Initial Contract Price Target	Ceiling	Qty
The Boeing Company, Seattle, WA F19628-89-C-0139, FPIF Award: September 25, 1989 Definitized: September 25, 1989	$59.0	$65.0	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$68.4	$75.4	3	$68.5	$68.5

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.2	$-0.4
Cumulative Variances To Date	$-2.4	$-1.4
Net Change	$-2.2	$-1.0

Explanation of Change:

Both cost and schedule unfavorable net variances are being effected by the further schedule delay (CCP 4857R1 titled "RSIP Program Reschedule Restructure") which has not been incorporated into the Boeing baseline at this time. Also attributing to the unfavorable cost variance is higher than planned overhead rates.

Neither the schedule nor the cost variance impacts the RSIP program.

The difference between the "initial" and "Current contract (Target) Price" is CCP 1049R1 P91 Mod $3.0M, CCP 4851 Schedule Restructure $4.4M, CCP 4849 Advanced Recording System (ARS) $1.5M, and NATO Attendance $0.5M total Target Price $68.4M.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 35.7% (5 yrs/14 yrs)

(2) Percent Program Cost Appropriated: 36.1% ($312.8 / $866.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY89-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2002)	Total
RDT&E	312.8	37.6	42.1	33.0	425.5
Procurement	-	-	-	441.2	441.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	312.8	37.6	42.1	474.2	866.7

RSIP Development (RDT&E) is now a cooperative program with NATO. The total $425.5M (TY$) is the U.S. share of the cooperative development program.

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1989				43.0	44.2	44.2	44.2	4.2
1990				59.6	63.7	63.7	53.5	4.0
1991				64.8	71.8	71.5	59.1	4.3
1992				103.7	117.7	113.4	97.3	2.8
1993				13.3	15.4	3.5	3.5	2.4
1994				31.6	37.6			2.4
1995				34.6	42.1			2.3
1996				25.6	31.8			2.3
1997				0.2	0.3			2.2
1998				0.2	0.3			2.2
1999				0.2	0.3			2.2
2000				0.2	0.3			2.2
Subtot				377.0	425.5	296.3	257.6	
Appropriation: 3010 Aircraft Procurement, Air Force								
1996	2	1.1	21.9	40.3	51.8			2.3
1997	2	3.2	15.8	39.6	52.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1998	4	2.1	25.1	49.8	66.9			2.2
1999	5		35.4	40.7	55.9			2.2
2000	8	1.3	52.6	60.4	84.7			2.2
2001	7		43.1	48.8	69.9			2.2
2002	6		36.5	41.0	60.0			2.2
Subtot	34	7.7	230.4	320.6	441.2			
Grand Total	34	7.7	230.4	697.6	866.7	296.3	257.6	

Accounting data for Obligated and Expended is as of 31 March 1993.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Note: Not required for pre-milestone III programs.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		441.2		N/A	N/A

AWACS RSIP is not yet a production program, this modification program is still in development and involves two prime contractors, Boeing and Westinghouse. The kit installations are done at the depot Oklahoma City ALC based on the availablity of the aircraft for modification, not plant capacity.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The concept of operation is the fleet of 34 aircraft (includes the test aircraft) flying 1200 hours per year each with two-level maintenance. The costs are the direct costs to support the primary personnel and to operate and maintain the radar (excluding the base operating support personnel and installation support, personnel acquisition and training). Unit level consumption includes consumables, condemnations, second destination transportation, and organizational level simulator maintenance. Radar depot maintenance is provided by Warner Robins Air Logistic Center. Contractor support provides maintenance of relevant depot support equipment, contracted through San Antonio Logistics Center. Sustaining support includes software maintenance (Oklahoma City - Air Logistics Center (OC-ALC)),

18a. (U) Operating and Support Costs (Cont'd):
simulator maintenance, organic repair of support equipment, and maintenance of technical data. Assumptions for RSIP and the antecedent system are the same, except that RSIP is predicted to increase reliability by 40 percent.

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Radar System Avg Annual Cost, E-3 Radar with RSIP	Avg Annual Cost, E-3 Fleet Predecessor Radar Pre-RSIP
Personnel	12.2	12.2
Unit Level Consumption	0.4	0.6
Depot Maintenance	1.8	3.0
Contractor Support	0.1	0.1
Sustaining Support	1.9	1.9
Total	16.4	17.8

c. (U) Contractor Support Costs -- None.

A revised O&S cost estimate is underway, and will be available in July 1993.

A-15 JSTARS GSM

*** UNCLASSIFIED ***

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Joint STARS GSM

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
Joint STARS Ground Station Module

2. DoD Component: Army

3. Responsible Office and Telephone Number:
SFAE-IEW-JS
FT. Monmouth, NJ 07703-5000
AV 996-5165 COMM 908-544-5165
COL. James L. Mitchell
Assigned: September 13, 1991

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. Program Elements/Procurement Line Items:

RDT&E:
PE 64770 Project D202
PROCUREMENT:
APPN 2035 ICN BA1080 (Army)
APPN 2035 ICN BA9103 (Army)

5. Related Programs:
Joint STARS Aircraft (USAF)
OV-1D Side-Looking Airborne Radar (SLAR) System
Unmanned Aerial Vehicle (UAV) (Imagery)
Bradley Fighting Vehicle System Variant (BFVS)
High Mobility Multipurpose Wheeled Vehicle (HMMWV)
Single Channel Ground and Airborne Radio System (SINCGARS)

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No SECURITY Objection
to PUBLIC RELEASE
25 MAY 1993
SECURITY REVIEW, OASD/PA

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Joint STARS

AS OF DATE: December 31, 1992

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6. Mission and Description:
The Joint Surveillance Target Attack Radar System (Joint STARS), is a surveillance, battle management and targeting radar system. It is a Joint Army and Air Force Program with the Air Force as the executive service. The Joint STARS radar is an airborne multimode radar system, incorporating an electronically scanned antenna and combining both Moving Target Indicator (MTI), Fixed Target Indicator (FTI) and Synthetic Aperature Radar (SAR) functions. The radar is carried aboard a modified E-8 Aircraft (AN/TSQ-XXX) and broadcasts processed radar data to the Army Ground Station Modules (GSM) through an omnidirectional data link. Joint STARS fills a critical need for an effective capability to detect, delay, disrupt, and destroy first and second echelon mobile targets. Joint STARS is unique because it is a closed loop system for real-time detection, tracking, and attack information of enemy ground targets. The Army Corps requires wide area surveillance to understand enemy force buildups and scheme-of-maneuver, in order to apply effective and timely maneuver of forces, battlefield management, and targeting of artillery, rockets and stand-off missles. There is no other system planned to provide this data in real-time. Joint STARS provides commanders at Tactical and Operational Echelons a near real-time, wide area surveillance system to monitor enemy force movements into and through the joint battle area. This allows air and ground commanders to take timely actions to shape the battle and decisively engage the enemy with fire and maneuver.

7. Program Highlights:
a. Significant Historical Developments --
In May 82, an OSD/USDRE memorandum directed that a Joint Air Force/Army Program Management Office be established, under Air Force lead, to develop a single multi-mode target acquisition and weapon guidance system. The Joint STARS Program resulted from this directive and was organized from the PAVE MOVER and SOTAS Program Offices. Based on the May 84 agreement by Air Force and Army Chiefs of Staff, the joint program began development of the airborne segment using the E-8A (a Boeing 707-320 class aircraft converted to military use). The Army Ground Station Module (GSM) Full Scale Engineering Development (FSED) contract was awarded to Motorola corporation in Aug 84. A Downsized Ground Station Module (DGSM) FSED was awarded Mar 86. In Sep 87, the Army directed the acquisition of nine Limited Procurement Urgent (LPU) Ground Station Modules (GSMs). These LPU variants receive, process and display OV-1 Mohawk SLAR (Side Looking Airborne Radar) radar data. Under the Nunn Iniative Airborne Radar Demonstrations (ARDS) Program, Joint STARS began a NATO Technical data exchange with the United Kingdom and France, and GSMs were deployed to those countries. The DGSM was subsequently stopped while still in the design phase, leaving two GSMs at the time (FY87); the Interim GSM (IGSM) and the LPU GSM. Both configurations were mounted on Army standard five-ton trucks, and shared a majority of payload

7a. Program Highlights (Cont'd):

subcomponents. In Dec 1988, the GSM program was restructured to capture all user requirements, to synchronize GSM and aircraft fieldings, and to field GSMs in time to support other 'Deep Battle' programs. In order to achieve these objectives, the existing GSM was to be enhanced in a phased effort (IGSM, LPU, Block I, Block II). The Acquisition Decision Memorandum directing implementation of this Block approach was signed in Mar 89 and an FSD contract for the Block I GSM was awarded in Sep 89. Block I improvements entail downsizing the electronic suite, increasing operational capabilities, and enhancing modularity of LRUs (Line Replaceable Units) for standardization and subsequent export to other Intelligence and Electronic Warfare (IEW) systems. Block II improvements involve integrating the Block I mission equipment and functions into an Electronic Fighting Vehicle System (EFVS) (a Bradley FVS variant) in order to meet Nuclear Biological Chemical (NBC) and nuclear hardening requirements of heavy divisions/corps. In Sep 90, Operation Field Demonstration (OFD-1) successfully demonstrated the JSTARS system (Aircraft/GSM) capabilities to NATO and US Forces in Europe. The last 3 LPU GSMs were deployed to United States Forces Korea (USFK) in Oct 90. The JCS ordered the deployment of the Joint STARS system, aircraft and Ground Station Modules (GSMs) to Operation Desert Storm in December 90. The order came at the request of CINCCENT (Commander-in Chief Central Command). In March 91, ODCSOPS developed a revised distribution plan which aligned GSM fieldings with anticipated future force structure and operational requirements. Based on this new distribution, quantities increased from 90 to 125. During the FY92 Congressional Appropriation review process, the GSM budget request was increased by $20M. These funds were directed for developing a light weight GSM. This increase accelerated start-up of the EMD Block IIA GSM (Block I Light (IL)) effort to FY92. In December 91 the Army submitted an initial proposal for a restructure of the GSM program. This restructure was due primarily to the Congressional language in the FY92 appropriation to develop a light GSM variant, as well as HQDA's directive to reduce future O&S cost by combining intelligence collection/analysis functions into a Common Ground Station. The Block I Light will entail integrating Block I (Block I Medium (IM)) components into the High Mobility Multipurpose Wheeled Vehicle (HMMWV) to support the light forces. The Block II, Common Ground Station (CGS), will incorporate other intelligence disciplines (SIGINT, IMINT, etc.) to enhance tactical battlefield intelligence processing and dissemination, as well as providing a single Intelligence and Electronic Warfare (IEW) Ground Station, resulting in the desired O&S savings.

b. Significant Developments Since Last Report --
The Joint STARS FY93 Research, Development, Test and Evaluation (RDTE) program was increased in the amount of $35M by Congress. These

7b. Program Highlights (Cont'd):

funds were provided to complete the acceleration of the Block IL EMD effort. Following the FY92 Congressional plus-up, an EMD contract with Motorola Corp, Scottsdale, AZ was awarded in May 92. The 4 Block IM EMD models completed Hardware Integration/Test, and were accepted by the government 3Q92. The Block IM trainer/simulator was also delivered to the US Army Intelligence Center and School (USAICS) at Ft. Huachuca, AZ. Both the actual Block IM hardware and the trainer/simulator were employed during initial training. GSM operators, as well as Test Evaluators, received hands on training in preparation for the Block IM Limited User Test (LUT). Due to delays in software maturation, the LUT was delayed and is now scheduled to begin 6 January 93. In August 92 Joint STARS was invited by Commander in Chief, U.S. Forces Korea, to integrate a high fidelity Joint STARS simulation into Focus Lens, Korea's Major War Fighting Simulation Exercise. A portable Ground Station Module Emulation was provided and successfully linked interactively with the Tactical Simulation (TACSIM) demonstrating the first practical example of Distributed Interactive Simulation (DIS) of a major IEW system. Joint STARS provided real time targeting data to the J3 Targeting Cell (OSAN), Intelligence data to the J2 Cell (CP Tango) and a visual display of simulated Joint STARS radar imagery collected during the exercise. Joint STARS has been invited to participate in Focus Lens 93, which will further refine the Joint STARS CONOPS for Korea and familiarize the Battle Staffs on the capabilities of the system. Revisions to the GSM ROC were approved on 17 November 92. Upon approval of the ROC, a revised GSM Program Baseline (PB) was approved by the AAE and forwarded to OSD on 7 December 1992. The most significant changes are the addition of the Block I Light GSM and Block II Common Ground Station (CGS) variants. Approval of the Program Baseline by OSD is anticipated in the near future and will complete the GSM restructure approved by the OSD Conventional Systems Committee and USAF/USA Four Star Summit.

The Joint STARS system is expected to satisfy the mission requirements.

c. Changes Since As Of Date --
Based on the results of the 6 January 93 Limited User test (LUT) entrance criteria flight, approval to start final training for LUT operators/evaluators was obtained on 9 January 93. A General Officers Operation Test Readiness Review (OTTR) on 28 January 93 approved LUT start. LUT flights (6) began 29 January 93 and were successfully completed on 8 February 93. An LUT simulation phase was conducted 15-25 February 93. The Army System Acquisition Review Council (ASARC) approved Low Rate Initial Production (LRIP) of 12 Block I Medium GSMs (MGSM) on 10 May 93.

8. Threshold Breaches:
There are cost and schedule breaches to the Approved Acquisition Program Baseline (APB) dated 15 Nov 89. There are no Nunn-McCurdy unit cost breaches.

The total procurement cost breach (from $626.6M to $733.0M) is a direct result of additional production quantities (97 to 104). In addition substantial adjustments in the 1993 procurement inflation table resulted in a higher FY89 equivalent value ($M).

The Block II (Block I Heavy) schedule breaches all occurred as a direct result of a conscious decision to stretch the Block I Heavy GSM (HGSM) program, allowing acceleration of the Block IIA (Block I Light) GSM. This schedule adjustment is consistent with the Army's evolution to a lighter, more rapidly deployable force as well as Congressional direction in the FY92 and FY93 appropriation. The Block I Medium GSM (MGSM) breaches occurred as a result of the slip from May to Jul 93 for the Low Rate Initial Production (LRIP) Defense Acquisition Board (DAB) and resulting LRIP contract.

Program deviation reports and an APB change request have been submitted.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Interim GSM FSD Award	AUG 84	AUG 84	AUG 84
Interim CDR	FEB 85	FEB 85	FEB 85
Interim Force DT&E	FEB 90	AUG 90	N/A
Joint SLPA/GD/OA:			
Start	OCT 90	SEP 90	SEP 90
Complete	N/A	SEP 91	N/A
LPU GSM Limited Prod Contr (urgent) Award	SEP 87	SEP 87	SEP 87
First Unit Equipped	OCT 93	OCT 93	OCT 93
LPU GSM ARDS Eval (UK)	N/A	NOV 88	NOV 88
LPU GSM FDT&E			
Start	JUN 89	AUG 89	N/A
LPU First Delivery	N/A	JUL 89	JUL 89
LPU GSM ARDS Eval (France)	N/A	AUG 89	AUG 89
LPU GSM First US Unit Equipped	JUN 90	MAY 90	MAY 90
Block I GSM FSD Award	AUG 89	SEP 89	SEP 89
Block I PDR	MAR 90	N/A	MAR 90
Block I Milestone III	NOV 92	NOV 92	JUL 93(Ch-1)

9a. **Schedule (Cont'd):**

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Block I Contract Award	DEC 92	DEC 92	JUL 93(Ch-1)
Block I First Unit Equipped	SEP 94	SEP 94	DEC 94
BLOCK II GSM			
Block II GSM FSD Award	OCT 92	OCT 92	SEP 93(Ch-2)
Block II CDR	APR 93	APR 93	FEB 94
Block II FDT&E Start	JAN 94	APR 94	N/A
Block II Prod Award	MAR 95	MAR 95	FEB 96
First Prod Delivery	N/A	APR 96	FEB 98
Block II First Unit Equipped	MAR 97	MAR 97	SEP 98

b. Previous Change Explanations --

Force DT&E was deleted per HQDA message R202140Z JUL 89. Milestone name changed from Joint IOT&E (Initial Operational Test & Evaluation) to Joint SLPV/GD/OA (System Level Performance Verification/Government Development Test and Evaluation/Operational Assessment) Army FDT&E start and Block I GSM contract award were changed to reflect actuals. First Unit Equip., Block II FDT&E, PDR and CDR were changed to correct program office reporting errors. Approved Acquisition Program Baseline milestones added to SAR reporting. The GD and OA milestones are Air Force only and have been deleted. Delays in receipt of sub- contractor material has delayed Block I TT/UT, Milestone III, and Contract Award. Delay in the EMD contract has caused Block I delays to the First Production Delivery, First Article Test, and First Unit Equipped. The acceleration of the Block IIA has caused delays in the Block II FSD Award, CDR, Prod IPR, Prod Award, First Prod Del, and First Unit Equipped. The Block II FDT&E start and complete is no longer an applicable milestone per current TEMP and has been deleted.

c. Current Change Explanations --

(Ch-1) Block I Milestone III and Block I Contract Award changed from Mar 93 to Jul 93 due to the slip in the tech and user tests.

(Ch-2) Block II FSD Award changed from Jan 93 to Sep 93 due to extended preparation and review of the technical specifications and solicitation/proposal.

9d. **Schedule (Cont'd):**

d. References --

Development Estimate:
ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

Approved Program:
DAE Approved Acquisition Program Baseline dated 15 November 1989.

10. **Performance Characteristics:**

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
INTERIM GSM					
Time Compression/ Integration of Data Display (frames MTI data per second)	5	5 / 5	5	5	
Target Auto Track/ Prediction (track on tgt file)	16	16 / 16	16	16	
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	50	50 / 50	50	50	
Workstations	2	2 / 2	2	2	
Reliability					
Mean Time Between Failure (MTBF)(hrs)	150	150 / 125	155	155	(CH-1)
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	71	71 / 71	77	77	(CH-2)
Maintenance					
Mean Time to Repair (MTTR) (min)	30	30 / 30	13	13	
Mean Time to Repair (MTTR) DS/GS (min)	60	60 / 60	60	60	
Max Time to Repair Unit (min)	60	60 / 60	30	30	
Max Time to Repair (DS/GS (hrs)	3.5	3.5 / 3.5	3.5	3.5	

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Interoperability	Rec & Trans to both TACFIRE (19) and ASAS (11)	Rec & Trans to both TACFIRE (19) and ASAS (11) / Rec & Trans to both TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)
LPU GSM				
Workstations	2	2 / 2	2	2
Track Targets	Display time of detection heading, speed, and location	Display time of detection heading, speed, and location / Display target file description heading, speed, & location	display target file description heading speed & location	display target file description heading speed & location
Predict Target Locations	Time of arrival	Time of arrival / Time of arrival	time of arrival	time of arrival
BLOCK I GSM				
Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5 / 5	TBD	5
Target Auto Track/ Prediction (track on tgt file)	N/A	16 / 16	TBD	16
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	N/A	50 / 50	TBD	50
Workstations	N/A	2 / 2	TBD	2
Reliability				
Mean Time Between Failure (MTBF)(hrs)	N/A	150 / 125	TBD	155
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	N/A	71 / 71	TBD	70
Maintenance				
Mean Time to Repair (MTTR) (min)	N/A	30 / 30	TBD	13
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60 / 60	TBD	60

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Max Time to Repair Unit (min)	N/A	60 / 60	TBD	30
Max Time to Repair (DS/GS (hrs)	N/A	3.5 / 3.5	TBD	3.5
Interoperability	N/A	Rec & Trans to both TACFIRE (19) and ASAS (11) / Rec & Trans to both TACFIRE (19) and ASAS (2)	TBD	Rec & Trans to TACFIRE (19) and ASAS (2)
Standard IEW Modules	Std HW & SF	Std HW & SW / Std HW & SW	Std HW & SW	Std HW & SW
Payload Weight (lbs)	9500	9500 / 10800	10073	10800
Imagery Storage (hrs on line per 2 hrs video)	8	8 / 8	8	8
Simultaneous Multisensor Operations	Data from 2 or more sensors	Data from 2 or more sensors / Data from 2 or more sensors	Data from 2 sensors	Data from more than 2 sensors
Two Independent Workstations	Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data / Display MTI, FTI, and SAR data	Display MTI, FTI & SAR data	Display MTI, FTI & SAR data
Remote Data Display	Data into existing data process facility	Data into existing data process facility / Data into existing data process facility	TBD	Data into existing data process facility
Nuclear Survivability	Hardened against EMP	Hardened against EMP / Hardened against EMP	TBD	Hardened against EMP
BLOCK II GSM Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5 / 5	TBD	5

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Target Auto Track/ Prediction (track on tgt file)	N/A	16	/ 16	TBD	16
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	N/A	50	/ 50	TBD	50
Workstations	N/A	2	/ 2	TBD	2
Reliability					
Mean Time Between Failure (MTBF)(hrs)	N/A	150	/ 125	TBD	155
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	N/A	71	/ 71	TBD	77
Maintenance					
Mean Time to Repair (MTTR) (min)	N/A	30	/ 30	TBD	13
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 60	TBD	60
Max Time to Repair Unit (min)	N/A	60	/ 60	TBD	30
Max Time to Repair (DS/GS (hrs)	N/A	3.5	/ 3.5	TBD	3.5
Interoperability	N/A	Rec & Trans to both TACFIRE (19) and ASAS (11)	/ Rec & Trans to both TACFIRE (19) and ASAS (2)	TBD	Rec & Trans to TACFIRE (19) and ASAS (2)
Standard IEW Modules	N/A	Std HW & SW	/ Std HW & SW	TBD	Std HW & SW
Payload Weight (lbs)	N/A	9500	/ 10800	TBD	10500
Imagery Storage (hrs on line per 2 hrs video)	N/A	8	/ 8	TBD	8
Simultaneous Multisensor Operations	N/A	Data from 2 or more sensors	/ Data from 2 or more sensors	TBD	Data from 2 or more sensors

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Two Independent Workstations	N/A	Display MTI, FTI, and SAR data	/ Display MTI, FTI, and SAR data	TBD	Display MTI, FTI, and SAR data
Remote Data Display	N/A	Data into existing data process facility	/ Data into existing data process facility	TBD	Data into existing data process facility
Nuclear Survivability	Hardened against EMP and TREE thermal radiation and blast	Hardened against EMP and TREE thermal radiation and blast	/ Hardened against EMP and TREE thermal radiation and blast	TBD	Hardened against EMP and TREE thermal radiation and blast
NBC Survivability	NBC protected	NBC protected	/ NBC protected	TBD	NBC protected
Commander's Tactical Terminal (CTT)	CTT data interface	CTT data interface	/ CTT data interface	TBD	CTT data interface
BLOCK I (LIGHT) GSM					
Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ 5	TBD	5
Target Auto Track/ Prediction (track on tgt file)	N/A	16	/ 16	TBD	16
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	N/A	50	/ 50	TBD	50
Workstations	N/A	2	/ 2	TBD	2
Reliability					
Mean Time Between Failure (MTBF)(hrs)	N/A	150	/ 125	TBD	155
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	N/A	71	/ 71	TBD	77
Maintenance					

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mean Time to Repair (MTTR) (min)	N/A	30	/ 30	TBD	30
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 60	TBD	60
Max Time to Repair Unit (min)	N/A	60	/ 60	TBD	30
Max Time to Repair (DS/GS (hrs)	N/A	3.5	/ 3.5	TBD	3.5
Interoperability	N/A	Rec & Trans to both TACFIRE (19) and ASAS (11)	/ Rec & Trans to both TACFIRE (19) and ASAS (2)	TBD	Rec & Trans to both TACFIRE (19) and ASAS (2)
Standard IEW Modules	N/A	Std HW & SW	/ Std HW & SW	TBD	Std HW & SW
Imagery Storage (hrs on line per 2 hrs video)	N/A	8	/ 8	TBD	8
Simultaneous Multisensor Operations	N/A	Data from 2 or more sensors	/ Data from 2 or more sensors	TBD	Data from 2 or more sensors
Two Independent Workstations	N/A	Display MTI, FTI, and SAR data	/ Display MTI, FTI, and SAR data	TBD	Display MTI, FTI, and SAR data
Remote Data Display	N/A	Data into existing data process facility	/ Data into existing data process facility	TBD	Data into existing data process facility
Nuclear Survivability	N/A	Hardened against EMP	/ Hardened against EMP	TBD	Hardened against EMP

b. Previous Change Explanations --

Addition of GSM Approved Acquisition Program Baseline characteristics to SAR reporting. IGSM MTBF, MTBOMF, MTTR and Max-TTR have been changed to reflect demonstrated performance.

10c. **Performance Characteristics (Cont'd):**

c. Current Change Explanations --

(Ch-1-2) Mean Time Between Failure (MTBF) and Mean Time Between Op Maint Failure changed from 175 and 85 to 155 and 77, respectively because of the demonstrated results during testing of the system.

d. References --

Development Estimate:
ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

Approved Program:
DAE Approved Acquisition Program Baseline dated 15 November 1989.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	452.4	468.3	573.4
Procurement	680.6	626.6	733.0
Recurring Costs	(563.8)		(588.7)
Nonrecurring Costs	(55.6)		(13.1)
Total Flyaway	(619.4)		(601.8)
Other Weapon Systems	(16.2)		(66.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(45.0)		(64.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	1133.0	1094.9	1306.4
Escalation	158.6	238.9	261.4
Development (RDT&E)	(-4.0)	(-3.8)	(28.2)
Procurement	(162.6)	(242.7)	(233.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1291.6	1333.8	1567.8
b. Quantity --			
Development (RDT&E)	15	15	21
Procurement	97	97	104
Total	112	112	125

11c. **Total Program Cost and Quantity (Cont'd):**

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

Approved Program:
DAE Approved Acquisition Program Baseline dated 15 November 1989.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1567.8	1491.0	1567.8
(2) Quantity	125	125	125
(3) Unit Cost	12.542	11.928	12.542
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	35.2	35.2	64.2
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	35.2	35.2	64.2
(2) Quantity	5	5	7
(3) Unit Cost	7.040	7.040	9.171

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	448.4	843.2	0.0	1291.6
Previous Changes:				
Economic	+8.4	+122.0	-	+130.4
Quantity	+28.7	+26.0	-	+54.7
Schedule	-	-	-	-
Engineering	+22.3	-	-	+22.3
Estimating	-0.8	-79.4	-	-80.2
Other	-	-	-	-
Support	-	+72.2	-	+72.2
Subtotal	+58.6	+140.8	-	+199.4
Current Changes:				
Economic	-6.2	-94.3	-	-100.5
Quantity	-	-20.8	-	-20.8
Schedule	-	-13.6	-	-13.6
Engineering	+41.4	-	-	+41.4
Estimating	+59.4	+70.8	-	+130.2
Other	-	-	-	-
Support	-	+40.1	-	+40.1
Subtotal	+94.6	-17.8	-	+76.8
Total Changes	+153.2	+123.0	-	+276.2
Current Estimate	601.6	966.2	-	1567.8

13a. **Cost Variance Analysis (Cont'd):**

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	452.4	680.6	0.0	1133.0
Previous Changes:				
Quantity	+22.5	+15.4	-	+37.9
Schedule	-	-	-	-
Engineering	+20.1	-	-	+20.1
Estimating	-1.3	-61.0	-	-62.3
Other	-	-	-	-
Support	-	+41.4	-	+41.4
Subtotal	+41.3	-4.2	-	+37.1
Current Changes:				
Quantity	-	+4.0	-	+4.0
Schedule	-	+2.7	-	+2.7
Engineering	+31.9	-	-	+31.9
Estimating	+47.8	+21.3	-	+69.1
Other	-	-	-	-
Support	-	+28.6	-	+28.6
Subtotal	+79.7	+56.6	-	+136.3
Total Changes	+121.0	+52.4	-	+173.4
Current Estimate	573.4	733.0	-	1306.4

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Congressional/HQDA guidance to increase prototype totals.

Engineering: ROC revisions due to Operation Desert Storm lessons learned.

Estimating: Refinement and rephasing of program estimate.

Procurement

Economic: Revised escalation indices.

Quantity: Production quantity increased to 104 GSMs.

Schedule: To account for change in scheduled procurement.

Estimating: Refinement of program estimate.

13b. Cost Variance Analysis (Cont'd):

Adjustment for current/prior year inflation offset.

Support: Initial spares and support equipment changes.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Inflation Indices (Economic)	N/A	-4.4
Adjustment to reflect cost of developing Block II (CGS) variants per the current BCE. (Engineering)	+31.9	+39.6
Adjustment for current/prior year inflation offset. (Estimating)	+0.8	+1.0
Refinement of previous estimate based on current BCE. (Estimating)	+47.0	+58.4
Correction of previous categorization in Dec 91 SAR		
(Economic)	N/A	-1.8
(Engineering)	--	+1.8
RDT&E Subtotal	+79.7	+94.6
(2) Procurement		
Revised Escalation Indices. (Economic)	N/A	-79.3
To account for acceleration of the production schedule during the FY95-02 time frame. (Schedule)	+2.9	-10.9
Adjustment for current/prior year inflation offset. (Estimating)	+0.7	+0.8
Refinement of program estimate to include Block I refurbishment costs. (Estimating)	+24.2	+30.8
Initial spares and other support item increases based on current BCE. (Support)	+28.8	+40.8
Correction of previous categorization in Dec 91 SAR		
(Economic)	N/A	-15.0
(Quantity)	+4.0	-20.8
(Schedule)	-0.2	-2.7
(Estimating)	-3.6	+39.2
(Support)	-0.2	-0.7
Procurement Subtotal	+56.6	-17.8

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
11.532	0.239	-0.928	-0.109	0.510	0.400	--	0.898	1.010	12.542

15. **Contract Information** (Then-Year Dollars in Millions):

a. RDT&E --

BLOCK I Light FSD:	Initial Contract Price Target	Ceiling	Qty
MOTOROLA, SCOTTSDALE, AZ DAAB07-92-C-L001, CPFF Award: May 29, 1992 Definitized: N/A	$22.5	$22.5	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$60.3	$60.3	4	$108.0	$100.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

At this point the contractor has not provided Contract Performance Data as the contract remains undefinitized and no contract baseline has been established. Definitization is scheduled for June 93, with cost reporting to commence 1-2 months thereafter.

Block I GSM:	Initial Contract Price Target	Ceiling	Qty
Motorola, Scottsdale, AZ DAAB07-89-C-S014, FPIF Award: September 22, 1989 Definitized: September 22, 1989	$70.0	$80.4	4

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$75.8	$87.2	4	$87.4	$86.9

15. **Contract Information (Cont'd):**

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-14.3	$-4.7
Cumulative Variances To Date (12/31/92)	$-19.8	$1.6
Net Change	$-5.5	$6.3

Explanation of Change:

Cost Variance: the cost variance is primarily attributable to two areas, underestimated requirement in software lines of code, and adjustments to overhead/G&A rates.

This is the last time contract # DAABO7-89-C-SO14 will be reported as it is more than 90% complete (DOD 5000.2-M, part XVI)

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 52.2% (12 yrs/23 yrs)

(2) Percent Program Cost Appropriated: 34.4% ($540.0 / $1567.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2004)	Total
RDT&E	458.0	26.3	16.4	100.9	601.6
Procurement	82.0	64.2	75.5	744.5	966.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	540.0	90.5	91.9	845.4	1567.8

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1982				5.1	4.1	4.1	4.1	4.9
1983				43.3	36.5	36.5	35.7	4.9
1984				77.7	67.8	67.8	65.6	3.8
1985				31.9	28.7	28.7	27.8	3.4
1986				45.4	42.1	42.1	39.8	2.8
1987				27.2	25.9	25.9	24.6	2.7
1988				18.9	18.7	18.7	18.1	3.0
1989				22.3	22.9	22.9	21.0	4.2
1990				35.5	37.8	37.8	35.8	4.0
1991				38.8	43.1	43.1	42.3	4.3
1992				59.6	67.8	67.8	47.7	2.8
1993				53.7	62.6	17.0	1.0	2.4
1994				22.1	26.3			2.4
1995				13.5	16.4			2.3
1996				17.5	21.8			2.3
1997				20.3	25.8			2.2
1998				21.0	27.3			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1999				19.6	26.0			2.2
Subtot	21			573.4	601.6	412.4	363.5	

Appropriation: 2035 Other Procurement, Army

1987	3	1.4	14.0	19.4	19.6	19.6	18.5	3.0
1988	6	1.9	20.2	26.0	27.2	27.2	25.9	4.2
1989								4.2
1990								4.0
1991								4.3
1992								2.8
1993	5	2.4	22.7	29.4	35.2			2.4
1994	7	2.2	41.4	52.7	64.2			2.4
1995	10	2.8	53.3	60.7	75.5			2.3
1996	9	0.6	65.0	71.9	91.5			2.3
1997	9		55.9	66.2	86.1			2.2
1998	10		56.1	62.4	82.9			2.2
1999	14		81.2	91.8	124.7			2.2
2000	13	1.8	76.3	89.8	124.7			2.2

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
2001	12		69.4	87.9	124.7			2.2
2002	6		33.2	44.1	64.0			2.2
2003				15.6	23.1			2.2
2004				15.1	22.8			2.2
Subtot	104	13.1	588.7	733.0	966.2	46.8	44.4	
Grand Total	125	13.1	588.7	1306.4	1567.8	459.2	407.9	

17. **Production Rate Data:**

a. Production Baseline Rate

Current quantities are based on HQDA (DAMO-FDI) Mar 92 requirements memo pending final approval at July 93 DAB LRIP.

17b. **Production Rate Data (Cont'd):**

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	57.4	64.2	125.4	-6.8	+61.2
Procurement Qty	6	7	16	-1	+9
Proc. Unit Cost	9.567	9.171	7.838	+0.396	-1.333
FY 1995					
Procurement Cost	46.5	75.5	119.0	-29.0	+43.5
Procurement Qty	6	10	16	-4	+6
Proc. Unit Cost	7.750	7.550	7.438	+0.200	-0.112
Balance of Proc. (FY 1996 to Complete)	920.1	744.5	830.0	+175.6	+85.5

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	12/12
Procurement	9/9

d. Approved Design-to-Cost Objective -- N/A.

A Design-to-Cost waiver was obtained from HQDA for this program and is therefore not applicable.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

O&S costs were based on LPU & IGSM models being fielded for 5 years. All other GSM models are presumed to have a 20 year life. Sustainment is based on cumulative quantity of fielded systems and appropriate personnel necessary to maintain the system. The source of the O&S data is the January 1993 Joint STARS (Army) Baseline Cost Estimate. There are no antecedent systems.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	N/A
Personnel	0.2	N/A
Unit Consumption	0.2	N/A
Other Sustainment	0.1	N/A
Total	0.5	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
CLS	5.0	1.0	1.0	2.0	9.0
Total	5.0	1.0	1.0	2.0	9.0

A-2 AFATDS

92-030

DK

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: AFATDS

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION

MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

No SECURITY Objection to PUBLIC RELEASE
26 MAY 1993
SECURITY REVIEW, ODCSINT, HQDA

1. Designation and Nomenclature (Preferred Name):
   Advanced Field Artillery Tactical Data System (AFATDS)

5

2. DoD Component: Army

3. Responsible Office and Telephone Number:
   SFAE-CC-FS
   Ft Monmouth, NJ 07703-5404
   AV 995-3090 COMM 908-544-3090
   COL Steven Boutelle
   Assigned: August 13, 1992

4. Program Elements/Procurement Line Items:

   RDT&E:
   PE 23726 Project D322
   PROCUREMENT:
   APPN 0350 ICN 225 (DCA/DNA)
   APPN 2035 ICN B28600 (Army)
   APPN 2035 ICN B78400 (Army)
   APPN 2035 ICN BA9708 (Army)

5. Related Programs:
ATCCS Common Hardware/Software (CHS), Standard Integrated Command Post Shelters (SICPS)

6. Mission and Description:
The Advanced Field Artillery Tactical Data System (AFATDS) is a single, integrated battlefield management and decision support

OASD(PA) DFOISR 93-C-706

6. Mission and Description (Cont'd):

system. It will function at Battery through Corps level as one of the five battlefield automation systems of the Army Tactical Command and Control System (ATCCS). AFATDS utilizes evolving commercial computer technology of the ATCCS Common Hardware/Software (CHS) procurement.

AFATDS is designed to overcome the size, vulnerability, high sustainment cost, limited functionality, central processing and training limitations of Tactical Fire Direction System (TACFIRE). AFATDS will be the Fire Support node of the ATCCS providing advanced software automation assistance to the Fire Support elements. AFATDS will provide 27 Fire Support functions, grouped in five Fire Support operational needs (Fire Support Execution, Fire Support Planning, Movement Control, Field Artillery Mission Support and Field Artillery Fire Direction Operations).

Based on the organizational structure to be supported, AFATDS hardware items will be comprised of the following: Fire Support Control Terminals, Fire Support Terminals, Power Converter Groups, Tactical Communications Interface Module (TCIM), Mass Storage Expansion Unit (MSEU), Electronic Printers, Tactical Display Devices, Local Area Network, and installation kits tailored to the Force Structure and available vehicles. This will all be ATCCS Common Hardware. Responsiviness, survivability, and continuity of Fire Support Operations will be enhanced via dispersed processing centers, intelligent remote (work stations) terminals , a distributed data base management system and distributed operations for Fire Support Officers at the Infantry and Armor battalion/brigade levels. AFATDS will interface/interoperate via standard communications media with all functional control elements of existing and future Army Fire Support Systems, other ATCCS Battlefield Functional Area (BFA) Systems, other services employing Fire Support Joint Interoperability Tactical Command and Control Systems message standards and Allied Forces using NATO Fire Support Standards.

7. Program Highlights:

a. Significant Historical Developments --

In 1981, the Department of Defense (DoD) approved the Mission Element Need Statement (MENS) for AFATDS. Approval to proceed into Concept Evaluation without an ASARC I was granted by the Vice Chief of Staff of the Army in March 1984. The contract for Concept Evaluation was awarded May 1984 to Magnavox, Ft Wayne, Indiana. This contract was completed with Concept Evaluation in April 1989. ASARC II/DAB approval to enter Full Scale Development (FSD) was obtained in 4Q89. A sole source FSD contract was awarded to Magnavox in April 1990. The program proceeded with the development of the Version 1 software (Version 3 will meet the objective system requirements) in accordance

7a. Program Highlights (Cont'd):

with MIL-STD 2167A. During 1991, AFATDS completed the Software Requirements and Preliminary Design Reviews and initiated the Detailed Design Phase. The Critical Design Review was completed in Jan 93. AFATDS Version 2 development effort was initiated in Oct 92with the user representatives (Field Artillery School and US Marine Corps) defining the operational requirements. These were incorporated into the System Specification. Version 2, in accordance with the AFATDS Acquisition Strategy, will be developed by the Version 1 contractor, Magnavox Electronic Systems Company.

The Fire Support Ada Conversion (FSAC) program was officially approved by the AAE in March 1991. The FSAC program will provide an accelerated fielding of ATCCS Common Hardware (CH) until the AFATDS software becomes available. The FSAC program will convert the existing control software to Ada and replace the existing hardware with the Lightweight Computer Unit (LCU). These LCUs will ultimately be utilized as the host for the AFATDS software. FSAC completed the Preliminary Design Review (PDR) in March 91, the Critical Design Review (CDR) in June, and the Final Qualification Test (FQT) in Sep 91.

In June 1991, a Memorandum of Agreement between the National Guard, PEO CCS and PM FATDS was signed for the procurement of the National Guard BCS Ada rehosted software on LCUs for the National Guard units using Dedicated Procurement Program funds. The National Guard procurement will be managed concurrent with the active BCS Ada rehost program.

b. Significant Developments Since Last Report --
During 1992, AFATDS Version 1 continued detail design, code, integration and test. The Version 1, Build 1, which represented approximately 20% of Version 1 functionality, was completed, integrated and tested in Jul 92. Version 1, Build 2, which represented 60% of the functionality, was nearing completion at the end of 1992. Build 3, which represents the remaining 20% functionality, was started in Nov 92 and is scheduled for completion in Jun 93.

The Version 2 proposal were received in Mar 92 and discussions, fact finding and negotiations proceeded for most of the year, with the contract modification finally being signed in Oct 92. The contractor then initiated the baselining of Version 2 and the definition of User requirements to be incorporated in the System Segment Specification

An update for the AFATDS Test and Evaluation Master Plan (TEMP) was initiated in Jan 92. Staffing of the TEMP was subsequently discontinued in Jun 92 because it did not show traceability between

7b. Program Highlights (Cont'd):

the Cost and Operational Effectiveness Analysis (COEA) and the Test and Evaluation Strategy. A new revision of the TEMP with an appendix showing COEA traceability was submitted to the AFATDS Test and Integration Working Group (TIWG) for review Oct 92.

A revised Approved Program Baseline for the AFATDS program was signed on 4 Oct 92. The new baseline reflected the administrative changes to the previous Program Baseline dated 16 Aug 90.

The FSAC program conducted an Initial Operational Test and Evaluation (IOTE) on the AN/GYK-37 Fire Control System in Mar 92. FSAC received type classification of the AN/GYK-37 and production approval was given in Aug 92. In Nov 92, a Conditional Material Release was granted for the AN/GYK-37 to be fielded as part of the Battery Computer System (BCS). The first fielding of the AN/GYK-37, which consists of the Lightweight Computer Unit (LCU), was in 1Q93 to the National Guard in South Dakota with the BCS Emulator software. The Ada Software package for the FDS was developed during 1992 and will be part of the Package 10 IOT&E in Mar 93.

AFATDS is expected to satisfy the mission requirements.

c. Changes Since As Of Date --
The AFATDS Critical Design Review was completed in Jan 93. Version 1, Build 2 was completed. Version 1, Build 3 which was initiated in Nov 92, continued on schedule. Detail analysis of the User requirements for AFATDS Version 2 continued with the use of Knowledge Acquisition Teams. The FSAC program is proceeding on schedule. The AN/GYK-37 with FDS Emulator software was fielded to the Active Army in Jan 93.

8. Threshold Breaches:
There are currently no breaches to the approved Army Acquisition Program Baseline (APB) date 4 Oct 92, and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Concept Evaluation (CE) Contract Award	MAY 84	MAY 84	MAY 84
Common HW/SW (CHS) Contract Award	AUG 88	AUG 88	AUG 88
CHS Initial Prototype (V1) Delivery	NOV 88	NOV 88	NOV 88
Software Formal Qualification Test Complete	JAN 89	JAN 89	JAN 89

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
User Concept Evaluation:			
Begin	MAR 89	MAR 89	MAR 89
Complete	APR 89	APR 89	APR 89
CHS Initial Ruggerized (V2) Delivery	JUN 89	JUN 89	JUN 89
ASARC II	JUL 89	JUL 89	JUL 89
DAB	SEP 89	SEP 89	SEP 89
Congressional Report	SEP 89	SEP 89	SEP 89
Full Scale Development Contract	APR 90	APR 90	APR 90
Preliminary Design Review (PDR) V1 (Start)	JUN 91	JUN 91	JUN 91
Critical Design Review (CDR) V1 (Start)	MAY 92	MAY 92	JUN 92(Ch-1)
Version 2 SW Development Begin	MAY 92	MAY 92	OCT 92(Ch-2)
CHS Hardware Order (AFATDS Training Base)	NOV 92	OCT 93	OCT 93
V3 Acquisition Alternative Selection	DEC 92	DEC 92	APR 93(Ch-3)
System Software Test V1	MAY 93	MAY 93	AUG 93(Ch-4)
CHS Hardware Delivery (AFATDS Training Base)	JUN 93	APR 94	APR 94
Force Development Test and Experimentation (FDT&E) -- Complete	JUL 93	OCT 93	NOV 93(Ch-5)
First Unit Equipped (FUE) V1	SEP 93	MAR 94	MAR 94
Preliminary Design Review V2 (Start)	NOV 93	JUN 94	JUN 94(Ch-6)
IOTE:			
Begin	JAN 94	FEB 94	FEB 94
Complete	FEB 94	MAR 94	MAR 94
ASARC -- Milestone III	APR 94	JUN 94	JUN 94
C3I Committee Review	N/A	AUG 94	AUG 94(Ch-7)
CDR V2 (Start)	JUN 94	JAN 95	JAN 95(Ch-6)
Version 3 SW Development -- Begin	NOV 94	NOV 94	NOV 94
System Software Test V2	JAN 95	SEP 95	SEP 95(Ch-6)
Initial Operational Capability (V1)	JAN 95	SEP 95	SEP 95
FDTE V2	MAR 95	JAN 96	JAN 96(Ch-6)
FUE V2	MAY 95	JUN 96	JUN 96(Ch-6)
FOTE V2:			
Begin	MAY 95	APR 96	APR 96(Ch-6)
Complete	JUL 95	JUN 96	JUN 96(Ch-6)
Fielding Total Force -- Start (V2)	SEP 95	N/A	N/A (Ch-8)
Fielding Total Force - Start (V1)	N/A	SEP 95	SEP 95(Ch-8)

b. Previous Change Explanations --

The CHS Hardware Order was moved from Nov 92 to Oct 93, and the corresponding CHS Hardware Delivery was moved from June 93 to Apr 94.

9b. Schedule (Cont'd):
This was due to the elimination of FY93 Other Procurement, Army AFATDS funds in the FY91 appropriation language.

FDTE Complete was rescheduled from Jul 93 to Oct 93. IOTE Begin moved from Jan 94 to Feb 94. The corresponding milestone for IOTE Complete was moved from Feb 94 to Mar 94. The ASARC Milestone III moved from Apr 94 to Jun 94. Based on the contract negotiations for AFATDS V1, the FDTE test window was Jun/Jul 93. Subsequent to contract award the Vice Chief of Staff established prescribed test windows for ATCCS testing with III Corps assets at Fort Hood to preclude perturbations to the warfighting mission of III Corps units in FY93. As a result, the current test windows are May/June and Sept/Oct. The AFTADS V1 schedule precludes participations in the May/June 93 test window. As such, the AFATDS V1 FDT&E was moved to the Sept/Oct 93 test window. The dates for IOTE are still being discussed, the best estimates are shown above. The ASARC is dependent on completion of the IOTE.

The First Unit Equipped V1 moved from Sep 93 to Mar 94. First Unit Equipped V2 moved from May 95 to Jul 95. FUE for Version 1 was originally scheduled for Sep 93 to coincide with the completion of FDTE (DCSOPS guidance) and FUE Version 2 was originally scheduled for the beginning of FOTE V2. FUE is now scheduled to coincide with the last month of the system testing, i.e., IOTE V1 (3/94) and FOTE V2 (7/95). This rescheduling of FUE is consistent across all BFA's and is IAW PEO CCS guidance.

The Initial Operational Capability V1 moved from Jan 95 to Sep 95. The old definition of IOC was based on refurbishment of test units which is still planned for Jan 95. The new definition of IOC is based on the first production unit fielded after ASARC (M/S III) which is scheduled for Sep 95.

c. Current Change Explanations --

(Ch-1) The Critical Design Review (CDR) V1 occurred in Jun 92 vice May 92 due to unexpected software design complexity.

(Ch-2) The Version 2 Software Development occurred in Oct 92 vice May 92 due to extended negotiations complicated by program funding reductions.

(Ch-3) The V3 Acquisition Alternative Selection was moved from Dec 92 to Apr 93. The delay is to allow for Government review of the quality of the Version 1 software as delivered by the builder prior to determination of the V3 acquisition strategy.

(Ch-4) The System Software Test (SST) V1 was moved from May 93 to

9c. Schedule (Cont'd):
Aug 93 due to delays in the software delivery caused by complexity in the program design.

(Ch-5) FDTE Complete was moved from Oct 93 to Nov 93 due to the rescheduling of the prescribed test window based on test unit availability.

(Ch-6) All milestones for the V2 effort were adjusted based on the V2 negotiations and reduction of FY93 RDTE funds. The affected milestones include: PDR V2 from Nov 93 to Jun 94; CDR V2 from Jun 94 to Jan 95; SST V2 from Jan 95 to Sep 95; FDTE V2 from Mar 95 to Jan 96; FUE V2 from Jul 95 to Jun 96; FOTE V2 Begin from May 95 to Apr 96 and FOTE V2 Complete from Jul 95 to Jun 96.

(Ch-7) Milestone added with approval of APB dated 4 October 1992.

(Ch-8) Due to the delays in the Version 2 software development effort, Fielding Total Force will be initiated utilizing Version 1 vice of Version 2 software.

d. References --

Development Estimate:
AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 October 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
TECHNICAL 1/					
MTBF-Hardware (hrs) 2/		N/A	N/A	N/A	(CH-1)
Fire Support Control Terminal (FSCT)	636	N/A	N/A	N/A	(CH-1)
Fire Support Terminal (FST)	1000	N/A	N/A	N/A	(CH-1)
MTTR-System - Unit Level (min)		N/A			
FSCT	20	N/A	N/A	N/A	(CH-1)
FST	20	N/A	N/A	N/A	(CH-1)
MIPS (Million Instructions per sec)		N/A			
FSCT	12	N/A	N/A	N/A	(CH-1)
FST	12	N/A	N/A	N/A	(CH-1)

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Internal Memory (Megabytes)		N/A				
FSCT	16	N/A		N/A	N/A	(CH-1)
FST	16	N/A		N/A	N/A	(CH-1)
System Ao-(Wartime) (Operating 24 hrs/day for 108 hours)						
Version 1	.90	.90	/ .80	TBD	.90	
Version 2	.90	.90	/ .85	TBD	.90	
Version 3	.90	.90	/ .88	TBD	.90	
Fire Mission Processing Peak Load (Fire Missions/hr)						
Version 1	247	247	/ 120	TBD	247	
Version 2	513	513	/ 420	TBD	513	
Version 3	780	780	/ 720	TBD	780	
Fire Mission Processing Speed (secs)		N/A				
Version 1	14.5	N/A		N/A	N/A	(CH-1)
Version 2	7.0	N/A		N/A	N/A	(CH-1)
Version 3	4.6	N/A		N/A	N/A	(CH-1)
Power Requirements (KW)		N/A				
FSCT	1.4	N/A		N/A	N/A	(CH-1)
FST	0.8	N/A		N/A	N/A	(CH-1)
Sustainment of Operation During Power Loss (min)	5	5	/ 3	TBD	5	
Emergency Purge (min)	2	2	/ 4	TBD	2	
Set-up/Tear-down (min) 3/	10	10	/ 15	TBD	10	
Weight in Pounds (Less Radios)						
FSCT	400	N/A		N/A	N/A	(CH-1)
FST	243	N/A		N/A	N/A	(CH-1)
Operating Temperature (deg F)	0-120	0-120	/ 0-110	TBD	0-120	
Process Combat Information Message (per hour)						
Version 1	N/A	323	/ 157	TBD	323	(CH-2)
Version 2	N/A	650	/ 526	TBD	650	(CH-2)

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Version 3	N/A	970	/ 895	TBD	970	(CH-2)
Develop Orders to Fire (per hour)						
Version 1	N/A	359	/ 168	TBD	359	(CH-2)
Version 2	N/A	723	/ 580	TBD	723	(CH-2)
Version 3	N/A	1078	/ 995	TBD	1078	(CH-2)
Establish and Update Battlefield Geometry (min)						
Version 1	N/A	1	/ 2	TBD	1	(CH-2)
Version 2	N/A	1	/ 2	TBD	1	(CH-2)
Version 3	N/A	1	/ 2	TBD	1	(CH-2)
Change Attack Guidance (min)						
Version 1	N/A	2	/ 3	TBD	2	(CH-2)
Version 2	N/A	2	/ 3	TBD	2	(CH-2)
Version 3	N/A	2	/ 3	TBD	2	(CH-2)
Coordinate Movement Request with Maneuver (min)						
Version 1	N/A	4.6	/ 5	TBD	4.6	(CH-2)
Version 2	N/A	3.8	/ 5	TBD	3.8	(CH-2)
Version 3	N/A	3	/ 4	TBD	3	(CH-2)
Prepare Quick Fire Plan (min)						
Version 1	N/A	10	/ 15	TBD	10	(CH-2)
Version 2	N/A	10	/ 15	TBD	10	(CH-2)
Version 3	N/A	10	/ 15	TBD	10	(CH-2)
Process Field Artillery Sensor Tasking Order (min)						
Version 1	N/A	4	/ 6	TBD	4	(CH-2)
Version 2	N/A	2	/ 3	TBD	2	(CH-2)
Version 3	N/A	1.3	/ 1.5	TBD	1.3	(CH-2)
Process Fire Support Coordination Measure (FSCM) (min)						
Version 1	N/A	2	/ 3	TBD	2	(CH-2)
Version 2	N/A	2	/ 3	TBD	2	(CH-2)
Version 3	N/A	2	/ 3	TBD	2	(CH-2)

1/ All Hardware related technical parameters are dependent upon ATCCS common hardware components.

10a. Performance Characteristics (Cont'd):

2/ Printer MTBF is not included in these figures. Printer is not mission essential.

3/ Set-up/Tear-down is for a Standard Integrated Command Post System (SICPS) without tentage erected.

b. Previous Change Explanations -- None

c. Current Change Explanations --

(Ch-1) These parameters were deleted in the Oct 92 APB as they reflect performance characteristics of the ATCCS common hardware managed by PM Common Hardware Software.

(Ch-2) These parameters were added in the Oct 92 APB to reflect the technical characteristics of the AFATDS functional software as identified in program requirements documentation.

d. References --

Development Estimate:
AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 October 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	390.7	378.7	381.4
Procurement	469.7	381.3	381.3
Total Flyaway	(339.4)		(252.7)
Total Other Wpn Sys	(87.2)		(109.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.1)		(19.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	860.4	760.0	762.7

11a. Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	191.7	172.1	114.1
Development (RDT&E)	(31.6)	(32.5)	(22.3)
Procurement	(160.1)	(139.6)	(91.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1052.1	932.1	876.8
b. Quantity --			
Development (RDT&E)	137	N/A	137
Procurement	3184	4308	4308
Total	3321	4308	4445

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- none

e. References --

Development Estimate:
AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 October 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	876.8	1207.7	876.8
(2) Quantity	4445	3321	4445
(3) Unit Cost	0.197	0.364	0.197

12. **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	12.4	12.4	51.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	12.4	12.4	51.1
(2) Quantity	131	131	573
(3) Unit Cost	0.095	0.095	0.089

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	422.3	629.8	0.0	1052.1
Previous Changes:				
Economic	-2.6	-12.3	-	-14.9
Quantity	-	-	-	-
Schedule	+5.0	+16.3	-	+21.3
Engineering	-	-	-	-
Estimating	-0.2	+3.4	-	+3.2
Other	-	-	-	-
Support	-	+146.0	-	+146.0
Subtotal	+2.2	+153.4	-	+155.6
Current Changes:				
Economic	-6.9	-10.1	-	-17.0
Quantity	-	+169.1	-	+169.1
Schedule	-	-27.2	-	-27.2
Engineering	-	-	-	-
Estimating	-13.9	-292.5	-	-306.4
Other	-	-	-	-
Support	-	-149.4	-	-149.4
Subtotal	-20.8	-310.1	-	-330.9
Total Changes	-18.6	-156.7	-	-175.3
Current Estimate	403.7	473.1	-	876.8

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	390.7	469.7	0.0	860.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+3.3	-	+3.3
Other	-	-	-	-
Support	-	+105.8	-	+105.8
Subtotal	-	+109.1	-	+109.1
Current Changes:				
Quantity	-	+127.8	-	+127.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.3	-217.8	-	-227.1
Other	-	-	-	-
Support	-	-107.5	-	-107.5
Subtotal	-9.3	-197.5	-	-206.8
Total Changes	-9.3	-88.4	-	-97.7
Current Estimate	381.4	381.3	-	762.7

b. Previous Change Explanations --

RDT&E
Economic: Revised escalation indices
Schedule: Revised development schedule due to funding profile changes

Procurement
Economic: Revised escalation rates
Schedule: Revised production schedule due to funding profile changes
Support: Changes due to reprogrammed funding for Total Package Fielding costs

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-8.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.8	+1.0
Additional funding for program continuation in FY98 and FY99 (Estimating)	+4.8	+6.5
Decreased levels of engineering and management support (Estimating)	-14.9	-21.4
RDT&E Subtotal	-9.3	-20.8
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-55.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+44.9
Quantity increase from 3184 to 4308 due to change in deployment philosophy (Quantity)	+127.8	+169.1
Change in procurement buy schedule in FY94-01 due to funding profile adjustments (Schedule)	--	-27.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.7	+0.9
Decrease in contractual costs due to revised pricing assumptions and techniques (Estimating)	-205.1	-276.2
Changes in CHS nonrecurring cost guidance (Estimating)	-13.4	-17.2
Adjustment for Current & Prior Inflation. (Support)	+0.1	+0.1
Decrease in support cost per revised CHS pricing guidance (Support)	-107.6	-149.5
Procurement Subtotal	-197.5	-310.1

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.317	-0.007	-0.043	-0.001	--	-0.068	--	-0.001	-0.120	0.197

15. **Contract Information** (Then-Year Dollars in Millions):

a. RDT&E --

AFATDS V1:	Initial Contract Price Target	Ceiling	Qty
Magnavox Ele. Sys. Co, Fort Wayne, IN DAAB07-90-C-E708, CPAF/FP Award: April 27, 1990 Definitized: April 27, 1990	$60.5	$0.0	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$72.0	$0.0	1	$81.3	$82.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.1	$-1.5
Cumulative Variances To Date (03/03/93)	$-3.7	$-4.8
Net Change	$-3.6	$-3.3

Explanation of Change:

The Estimated Price at Completion has increased with the addition of scope of work through contract modifications. The additional scope includes a Training Device System Engineering Change Proposal (ECP), incorporations of USMC DCT messages, EMAPS software implementation, AR380-19 design work, Program Support Environment (PSE) maintenance, PSE upgrades and Interbase DBMS purchases. The Contract Budget Base has not exceeded the Contract Cost Baseline.

The contract shows a schedule variance due to resource shortages and complexity of design. Magnavox has revised the Software Build Plan to ensure the timely delivery of the AFATDS V1 software, and the Schedule Performance Indicator has improved over the past months. The Cost Performance Indicator remains constant over the past months.

15. Contract Information (Cont'd):

AFATDS V2:	Initial Contract Price Target	Ceiling	Qty
Magnavox Ele. Sys. Co, Ft Wayne, IN DAABO7-90-C-E708, Mix Award: October 4, 1992 Definitized: N/A	$47.4	$0.0	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$47.4	$0.0	1	$47.2	$47.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (03/03/93)	$0.0	$-0.1
Net Change	$0.0	$-0.1

Explanation of Change: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 61.9% (13 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 33.9% ($296.8 / $876.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2001)	Total
RDT&E	254.5	46.3	33.1	69.8	403.7
Procurement	42.3	51.1	70.3	309.4	473.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	296.8	97.4	103.4	379.2	876.8

16c. **Program Funding Summary (Cont'd):**

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1981				1.9	1.4	1.4	1.4	10.6
1982				2.2	1.7	1.7	1.7	7.6
1983				4.1	3.3	3.3	3.3	4.9
1984				18.2	15.3	15.3	15.3	3.8
1985				27.3	23.6	23.6	23.6	3.4
1986				18.5	16.5	16.5	16.5	2.8
1987				7.9	7.2	7.2	7.2	2.7
1988				11.7	11.1	11.1	11.1	3.0
1989				17.3	17.1	17.1	17.1	4.2
1990				28.0	28.7	28.7	28.7	4.0
1991				37.6	40.1	40.1	38.0	4.3
1992				44.9	49.1	49.1	46.8	2.8
1993				35.2	39.4	30.4	5.3	2.4
1994				40.8	46.3			2.4
1995				28.3	33.1			2.3
1996				27.0	32.3			2.3
1997				25.7	31.4			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1998				2.5	3.1			2.2
1999				2.3	3.0			2.2
Subtot	137			381.4	403.7	245.5	216.0	

Expenditures and Obligations reflect program office records as of 28 Feb 93.

Appropriation: 2035 Other Procurement, Army

1988		8.8		8.8	8.8	8.8	8.8	3.0
1989								4.2
1990								4.0
1991								4.3
1992	173	0.9	4.9	6.1	6.9	6.9	2.0	2.8
1993	131	1.7	4.5	10.8	12.4	7.5	0.2	2.4
1994	573	2.1	26.2	43.7	51.1			2.4
1995	716	2.7	37.0	58.7	70.3			2.3
1996	609	1.2	34.5	49.2	60.2			2.3
1997	552	1.2	31.1	45.5	56.9			2.2
1998	282	1.2	21.2	36.9	47.1			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1999	376	1.5	24.5	41.9	54.7			2.2
2000	270	1.5	18.7	34.3	45.8			2.2
2001	286	1.2	17.0	32.8	44.7			2.2
Subtot	3968	24.0	219.6	368.7	458.9	23.2	11.0	
Army	4105	24.0	219.6	750.1	862.6	268.7	227.0	
Appropriation: 0350 National Guard & Reserve Equipm,Defense								
1992	340		9.1	12.6	14.2	12.8	10.9	3.1
Subtot	340		9.1	12.6	14.2	12.8	10.9	
DoD	340		9.1	12.6	14.2	12.8	10.9	
Grand Total	4445	24.0	228.7	762.7	876.8	281.5	237.9	

17. Production Rate Data:

a. Production Baseline Rate

AFATDS system hardware will be procured off the Common Hardware Software (CHS) and SAIC contracts managed by PM Common Hardware Software. Both contracts are for non-developmental items. The steady state full production rate for the CHS contract is identified as 200 units per month. The steady state full production rate for the SAIC contract is 300 units per month. Annual production rates for both contracts are determined based on the combined requirements of all the Automated Tactical Command and Control Systems (ATCCS)

17a. Production Rate Data (Cont'd):
programs.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		51.1		N/A	N/A
Procurement Qty		573		N/A	N/A
Proc. Unit Cost	N/A	0.089	N/A	N/A	N/A
FY 1995					
Procurement Cost		70.3		N/A	N/A
Procurement Qty		716		N/A	N/A
Proc. Unit Cost	N/A	0.098	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		309.4		N/A	N/A

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	137/137
Procurement	513/484

d. Approved Design-to-Cost Objective -- N/A.

The AFATDS will utilize Common Hardware equipment. There is no Design-to-Cost Objective for the program.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The O&S costs are to operate and maintain the AFATDS system, based on a peacetime operating tempo of 1800 hr/yr. The costs are based on an operating life of 20 years, with a reprocurement of the CHS hardware after 10 years. The CHS will be contractor maintained above the unit level at Regional Support Centers. Costs are from the AFATDS Baseline Cost Estimate, March 1990, and FSAC Baseline Cost Estimate, Jan 1992. Costs are shown per division.

The AFATDS will replace the TACFIRE/LTACFIRE systems and associated Fire Support hardware. FSAC will replace the current BCS system. The costs shown were provided by the Field Artillery School (USAFAS), Ft Sill, and reflect TACFIRE support costs only. Military personnel

18a. Operating and Support Costs (Cont'd):
costs are assumed to be the same as for the AFATDS and TACFIRE as crew requirements will be unchanged.

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per DIVISION	Avg Annual Cost Per TACFIRE SYSTEM
Military Personnel	15.6	15.6
Other	4.8	15.3
Total	20.4	30.9

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Eng/Tech Sevices	0.3	---	---	---	0.3
Total	0.3	---	---	---	0.3

A-29 STINGER RMP

92-059

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: STINGER-RMP

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
FIM 92C/D Man-Portable Air Defense Guided Missile System (STINGER-RMP)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
AIR-TO-AIR MISSILE PROJECT OFFICE
SFAE-MSL-ATA
REDSTONE ARS, AL 35898-5630
COL DONALD H. WATT, JR
Assigned: March 5, 1990
AV 746-6191 COMM (205)876-6191

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 64306A (Sunk)
Project D524
PROCUREMENT:
APPN 2032 ICN C18500 (Army)

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- 1 -

Concur in Classification as marked
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SECURITY REVIEW, ODCSINT, HQDA

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5. (U) Related Programs:
AVENGER (Line of Sight Rear (LOS-R) Pedestal Mounted STINGER (PMS))
AH-64 (Apache)
OH-58C/D (Kiowa/Kiowa Warrior)
AH-1 (Cobra)

6. (U) Mission and Description:
The STINGER-RMP (reprogrammable microprocessor) Weapon System is an advanced man-portable, shoulder-fired air defense system. It provides defense for ground forces against attack by low-flying aircraft and utilizes a passive infrared and ultraviolet homing guidance system which operates independently after aiming and launching by the operator. The system is comprised of the weapon (missile in launcher and reusable gripstock), an Identification Friend or Foe (IFF) unit, trainers, and ancillary equipment. The Basic STINGER missile was an infrared seeking system fielded in 1981. The follow-on STINGER-POST (Passive Optical Seeker Technique) system updated the guidance system capability through the use of a dual color (infrared/ultraviolet) seeker. In response to other countermeasure threat advances, the STINGER-POST design was adapted to STINGER-RMP. The guidance functions of the STINGER-RMP are under software control and are reprogrammable via a memory module located in the gripstock, external to the missile. This will allow any future threat changes to be countered by changing the software in the memory module rather than by changing missile hardware. The STINGER systems replace the REDEYE Weapon System in order to counter the threat of the 1980's and 1990's. STINGER-RMP will provide the active army with a light air defense missile for defense of priority assets within the division against hostile aircraft using advanced infrared countermeasures. STINGER-RMP is also deployed on the OH-58C/D and qualified but not deployed on the AH-64 and AH-1 as Air-to-Air STINGER (ATAS). This air to air launch capability enhances the survivability of the host aircraft.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The STINGER BASIC program began in 1972 and was completed in 1987. STINGER-POST initial hardware was available in February 1987. This program was completed with the final STINGER-POST missile delivered in September 1987. During the September 1989 reporting cycle, the STINGER SAR was separated into two reports: STINGER BASIC/POST and the STINGER-RMP. The STINGER BASIC/POST SAR was terminated due to completion of the program.

The STINGER-RMP program is an outgrowth of the STINGER-POST Program. The program was initiated in June 1983 to improve performance in an infrared countermeasure environment and to allow change as the threat evolves. The first STINGER-RMP production contract was awarded in August 1985. The Fiscal Year 1987 letter

7a. (U) Program Highlights (Cont'd):

order contract was definitized into a three-year multiyear contract in March 1988. The second year portion of the three-year multiyear contract was signed in April 1988. In September 1987, a second source contract was awarded. Competition began with the FY 89 missile contract awarded in April 1990.

The R&D program was extended from its intended conclusion date of July 1989 when sufficient performance to satisfy the program requirement had not been achieved. The R&D contract effort continued until May 1990, and include associated test requirements that resulted in test milestone slippages. The OSD Conventional Systems Committee (CSC) met on 24 May 1989 to review STINGER-RMP status pursuant to a decision to release FY 89 funding. Through CSC approval OSD released $225M in FY 89 funds to continue missile procurements for the Army and Marine Corps. The Army completed the approved test requirements in late October 1989. A program status update was held in November 1989 and the remaining FY 89 funds were released. Program revisions were submitted for Army Acquisition Executive (AAE) approval.

On 29 April 1991 the unawarded portion of the FY 90 missile production program (1354 missiles) was awarded to General Dynamics (GD) as a modification to contract DAAH01-91-C-0025. This was a result of Raytheon, the second source contractor, not qualifying as scheduled.

On 3 May 1991, the AAE approved reorganization of Program Executive Office (PEO), Air Defense which converted the STINGER Project Office to the Air-to-Air Missile Project Office. In August 1991, Raytheon was determined qualified to compete for the FY 91 missile procurement. DD250 acceptance of Raytheon, the second source, missiles began in December 1991. General Dynamics was awarded a competitive contract for 4359 of the FY 91 missile quantity on 5 September 1991. The Air-to-Air Missile Project Office is managing the STINGER retrograde/retrofit program at Red River Army Depot. The effort involves cleaning/refurbishment of missile rounds, gripstocks, containers, and battery coolant units (BCUs) returned from Southwest Asia.

b. (U) Significant Developments Since Last Report --

A letter contract was awarded on 21 April 1992 to start the development of the RMP software and missile hardware upgrade known as Block I. Air-to-Air Missile Project Office transferred to PEO Tactical Missiles management in August 1992. Hughes Aircraft Company purchased General Dynamics missile business, effective 22 August 1992, and consolidated its missile operations with those of GD in a new subsidiary, the Hughes Missile Systems Company. The

7b. (U) Program Highlights (Cont'd):

retrograde/retrofit program at Red River Army Depot was completed in September 1992. The Bradley STINGER Fighting Vehicle, which is the Bradley equipped with racks to hold STINGER weapon rounds, fielded three systems to heavy divisions and TRADOC in 1992. A study was begun in September 1992 to evaluate and implement growth options for the Bradley STINGER Fighting Vehicle. Transition to battery coolant units incorporating lithium battery technology began in 1992. In 1992 STINGER missiles worldwide were retrofitted with booster pellets in the umbilical assembly to improve cold weather performance. Booster pellets were also installed in production missiles. The STINGER-RMP is expected to meet mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently no breaches to the Approved Acquisition Program Baseline (APB) dated 4 February 1991, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
ASARC III	JUN 83	JUN 83	JUN 83(Ch-1)
R&D Contract Award	SEP 84	SEP 84	SEP 84
Initial Production Contract Award	N/A	AUG 85	AUG 85
Development Test/Operational Test (DT/OT) Started	N/A	MAY 86	MAY 86
FY86 Production Contract Award	NOV 86	SEP 86	SEP 86
2nd Source Selection Award	N/A	SEP 87	SEP 87
Production Verification Test (PVT I) Pilot Lot Test Started	N/A	NOV 87	NOV 87
DT/OT Test Completed	N/A	DEC 87	DEC 87
FY87-89 Multiyear Contract Award (36 months)	N/A	MAR 88	MAR 88
PVT I Completed	N/A	APR 88	APR 88
Special Test (SANDIA)	N/A	MAY 88	MAY 88
Eng Development Test (Extension) Start	N/A	JUN 88	JUN 88
Test & Eval Master Plan Approval (Army)	N/A	MAR 89	MAR 89
PVT II Start	N/A	APR 89	APR 89
FY89 2nd Source Option Exercised	N/A	MAY 89	MAY 89
Initial Production Contract Deliveries Started	N/A	JUL 89	JUL 89

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
FY86 Production Deliveries Start	N/A	AUG 89	AUG 89
PVT II Complete	N/A	OCT 89	OCT 89
First Unit Equiped (FUE) USAREUR	NOV 87	NOV 89	NOV 89
FY89 Competitive Contract Award	N/A	APR 90	APR 90
Follow-On Test & Eval Start (Operational Assessment/PVT III)	N/A	N/A	DEL
FY87-89 MYP Deliveries Start	N/A	APR 90	APR 90
FY90 Competitive Contract Award	N/A	N/A	DEL
Performance Assessment	N/A	AUG 90	AUG 90
Eng Development Test (Extension) Complete	N/A	JUN 90	JUN 90
R&D Program Complete	DEC 87	MAY 90	OCT 90
FUE EUSA	N/A	SEP 92	NOV 91
FUE FORSCOM	N/A	AUG 90	AUG 90
FY90 Prime Contract Award	N/A	OCT 90	OCT 90
2nd Source Qualification Decision	N/A	MAR 91	AUG 91
FY90 Deliveries Start	N/A	MAY 92	NOV 92(Ch-2)
FUE WESTCOM	N/A	AUG 93	SEP 92(Ch-3)
FUE ARNG	N/A	JAN 94	OCT 92(Ch-4)

b. (U) Previous Change Explanations --

Initial Production Contract Deliveries Started changed from October 1987 to July 1989 and FY 86 Production Deliveries Start changed from September 1988 to August 1989 both due to software related problems. Performance Assessment changed from March 1989 to October 1990, Eng Development Test (Extension) Complete changed from May 1989 to October 1990, and the R&D Program Complete changed from December 1989 to October 1990 due to extension of engineering development contract and to difficulties with the RMP software and test scheduling problems for tests to be performed with latest software. PVT II Complete changed from May 1989 to October 1989 due to extension of ED contract and expanded test program. The Follow-On Test & Evaluation Start changed from April 1989 to September 1990 and the Follow-On Test and Evaluation Complete changed from May 1989 to November 1990 due to increase in test scope and delays in completion of Government tests. The FY 87-89 Multiyear Deliveries Start changed from June 1989 to April 1990 due to software related problems. The 2d Source Pilot Lot Flight Test Start changed from January 1990 to November 1990, the 2d Source Pilot Lot Flight Test complete changed from July 1990 to April 1991, and the 2d Source Government Evaluation Flight Test Start changed from September 1990 to May 1991, 2d Source Government Evaluation Flight Test Complete changed from January 1991 to July

9b. (U) Schedule (Cont'd):
1991 due to program delays experienced because of problems with the test equipment development, proofing, and validation causing a delay in delivery of missiles for pilot lot test. The FY 87 2d Source Deliveries Start changed from February 1991 to May 1991 and the FY 89 2d Source Deliveries Start changed from May 1991 to August 1991 due to delays in completing hardware and pilot lot testing. Milestones for FOTE (Start and Complete), Second Source Pilot Lot Flight Test (Start and Complete), FY 87 2d Source Delivery Start, 2d Source Government Evaluation Flight Test (Start and Complete), and FY 89 2d Source Delivery Start were deleted in accordance with approved APB and Deviation Report since the second source contractor was having difficulties producing and testing STINGER-RMP missiles. The FY 90 Competitive Contract Award changed from April 1990 to September 1990 due to delays in the solicitation associated with the FY 90 Authorization Act restrictive language. FUE (EUSA) changed from October 1990 to March 1993 due to delays in missile acceptance until improvements in contract performance requirements were completed which caused changes in fieldings and because STINGER assets were diverted to support Operation Desert Shield; then rescheduled by DA from March 1993 to November 1991 to allow for simultaneous STINGER-RMP deployment to support AVENGER. The FUE (WESTCOM) changed from August 1993 to January 1993 because current production schedules show an increase in scheduled deliveries allowing for earlier deployment. The FUE (ARNG) changed from January 1994 to July 1992 due to change in sequence for issue and an update in HQDA DCSOPS Operation Desert Shield approved contingencies, and changed back to January 1994 due to prioritization of the Force Structure as directed by HQDA DCSOPS at the end of Operation Desert Storm. Engineering Development Test (Extension) Complete changed from September 1990 to June 1990 due to demonstration of flight tests to prove the latest production version of software (Mod IV). FY 89 Competitive Contract Award slipped from February 1990 to April 1990 due to pending DA guidance on the acceptance of hardware according to the FY 90 Authorization Bill. Performance Assessment for the latest gripstock and software was completed ahead of schedule, August 1990 in lieu of October 1990. FUE FORSCOM was completed ahead of schedule (August 1990 versus October 1990) due to Operation Desert Shield. FY 90 Deliveries Start changed from May 1992 to October 1992 since problems experienced under the RMP engineering development program caused the production and delivery schedules to stretch out. FY 90 Competitive Contract Award, renamed in revised APB as FY 90 Prime Contract Award, slipped from September 1990 to October 1990 due to award of the contract to the prime contractor only at this time. The competitive award was delayed due to problems associated with the second source contractor. Second Source Qualification Decision changed from March 1991 to August 1991 as the second source contractor was still in Qualification Testing and was determined qualified to compete for the FY 91 missile procurement at that time.

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

(Ch-1) Corrects typographical error in previous SAR.

(Ch-2) FY 90 Deliveries Start changed from October 1992 to November 1992 when production was delayed at the prime contractor plant for retrograde of missiles returned from Southwest Asia. FY 90 missile acceptance was also delayed by technical issues related to the Radio Frequency Interference (RFI) filter. Missile acceptance resumed after system level testing revealed no system degradation.

(Ch-3) FUE for WESTCOM changed from January 1993 to September 1992 because of special DA (DCSOPS) authorization to field to a Division Ready Brigade from the DA Master Priority List (DAMPL) "designated for rapid response."

(Ch-4) FUE for Army National Guard (ARNG) changed from January 1994 to October 1992 because it was accelerated due to DA (DCSOPS) addition of ARNG units to Force Package II fielding sequence in the DAMPL.

d. (U) References --

(U) Production Estimate:
Approved STINGER-RMP DCP dated 6 June 1983.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 04 February 1991.

10. (U) Performance Characteristics:

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations --

System effectiveness changed based on reliability evolution and performance. Weight changed based on improved gripstock. Effective System Inherent (Esi) values in previous reports replaced by Eso values in December 1988 report. Current Estimate for Weapon Reliability was erroneously reported in a previous SAR as 0.89. Previously demonstrated performance was not representative of current software. Missile performance based on MICOM Performance Estimate and current understanding of infrared countermeasures effects were incorporated in the Eso formula. System effectiveness changed to

10b. (U) Performance Characteristics (Cont'd):
reflect performance assessment results from flight tests completed in August 1990.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
Approved STINGER-RMP DCP dated 6 June 1983.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 04 February 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	52.3	46.1	46.1
Procurement	2215.3	1089.7	1119.3
Flyaway	(2095.7)		(1050.6)
Other Wpn Sys Cost	(119.6)		(68.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year $	2267.6	1135.8	1165.4
Escalation	693.6	348.6	353.5
Development (RDT&E)	(7.0)	(3.2)	(3.2)
Procurement	(686.6)	(345.4)	(350.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2961.2	1484.4	1518.9
b. (U) Quantity --			
Development (RDT&E)	6	N/A	9
Procurement	36028	28799	29099
Total	36034	28799	29108

c. (U) Foreign Military Sales/International Cooperative Programs --
(Dollars in Millions)

(U)	Germany	73.6
(U)	Israel	12.9
(U)	Japan	83.9
(U)	Norway	.3
(U)	Switzerland	54.6

11c. (U) **Total Program Cost and Quantity (Cont'd):**

(U)	Greece	39.7
(U)	Portugal	3.2
(U)	Denmark	46.9
(U)	Italy	1.7
	Total	$316.8

As of 31 December 1992, sales are $316.8 for 2289 STINGER-RMP (less reprogrammable module) Missiles, Training/Training Support Equipment, TDP and/or services. Dollar amounts indicated for Germany and Switzerland include foreign military sales (FMS) cases in support of the European STINGER dual production and the Swiss STINGER coproduction programs, respectively.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
Approved STINGER-RMP DCP dated 6 June 1983.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated 04 February 1991.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1518.9	1500.5	1518.9
(2) Quantity	29108	28808	29108
(3) Unit Cost	0.052	0.052	0.052
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	34.7	34.7	8.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	34.7	34.7	8.4
(2) Quantity	300	300	0
(3) Unit Cost	0.116	0.116	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	59.3	2901.9	0.0	2961.2
Previous Changes:				
Economic	-1.2	+13.5	-	+12.3
Quantity	+0.2	-968.2	-	-968.0
Schedule	-	+102.7	-	+102.7
Engineering	+3.7	-	-	+3.7
Estimating	-12.7	-556.7	-	-569.4
Other	-	-	-	-
Support	-	-42.0	-	-42.0
Subtotal	-10.0	-1450.7	-	-1460.7
Current Changes:				
Economic	-	-4.2	-	-4.2
Quantity	-	+11.8	-	+11.8
Schedule	-	+12.9	-	+12.9
Engineering	-	-	-	-
Estimating	-	+20.9	-	+20.9
Other	-	-	-	-
Support	-	-23.0	-	-23.0
Subtotal	-	+18.4	-	+18.4
Total Changes	-10.0	-1432.3	-	-1442.3
Current Estimate	49.3	1469.6	-	1518.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	52.3	2215.3	0.0	2267.6
Previous Changes:				
Quantity	+0.6	-680.3	-	-679.7
Schedule	-	+76.4	-	+76.4
Engineering	+3.7	-	-	+3.7
Estimating	-10.5	-471.4	-	-481.9
Other	-	-	-	-
Support	-	-35.9	-	-35.9
Subtotal	-6.2	-1111.2	-	-1117.4
Current Changes:				
Quantity	-	+7.8	-	+7.8
Schedule	-	+8.2	-	+8.2
Engineering	-	-	-	-
Estimating	-	+14.2	-	+14.2
Other	-	-	-	-
Support	-	-15.0	-	-15.0
Subtotal	-	+15.2	-	+15.2
Total Changes	-6.2	-1096.0	-	-1102.2
Current Estimate	46.1	1119.3	-	1165.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Additional 3 Missiles.

Engineering: Addition and deletion of Pedestal Mounted STINGER (PMS); Safeguard Interlock System.

Estimating: Revision of Pedestal Mounted STINGER (PMS) estimate. Delete STINGER follow-on. Current/prior year inflation offset.

Procurement

Economic: Revised escalation indices.

Quantity: Additional 8080 missiles for Sgt York and 444 additional peace-time losses due to stretch out of

13b. (U) Cost Variance Analysis (Cont'd):

program. Additional Army of Excellence quantities and deletion of Sgt York missiles. Added 5825 missiles in FY 96 to reach the revised Army Acquisition Objective (AAO). Added 270 missiles to FY 91. Terminated FY 92-96 procurement (-30260 missiles) due to Army reevaluation of missile requirements and prioritizations. Correction of prior SAR category allocation associated with the decrease of 30,260 missiles. Deletion of prior SAR variance calculated from current estimate cost/quantity curve. Variance calculated using baseline cost/quantity curve.

Schedule: Moved 1750 missiles from FY 93 to FY 89. Moved 639 missiles from FY 87 to FY 93. Shift of 530 missiles to outyears. Allocation of schedule variance associated with quantity decrease.

Estimating: Adding additional tooling costs and changing cost estimating methodology and cost savings from actual contracts. Unit cost reduction and revised Engineering Change Order (ECO) estimate; addition of estimated warranty risk balance of cost of 8524 missiles added for Sgt York, additional peacetime losses, and the addition of PMS. Deletion of PMS; quantity change from 6000 per year to 5000 per year. Multiyear Procurement/2nd Source Savings. Correction of prior variances & miscategorization to reconcile flyaway cost. Revised cost estimating methodology, and revised flyaway definition (to incorporate gripstocks and containers). Current/prior year inflation offset. Procure additional Battery Coolant Units (BCUs) to support Desert Storm. Revised flyaway estimate incorporating revised FY 90 and FY 91 missile cost and test requirements. Correction of miscategorization of support element reported as flyaway. Allocation of estimating variance associated with quantity decrease.

Support: Decrease in support costs associated with the reduction of ground support equipment, reduction of 30,260 missiles, and revised flyaway definition (which transfers gripstocks and containers into the flyaway line). Transferred $2.7M base-year/$4.5M then year to STINGER line for support of Total Package Fielding (TPF). Correction of prior variance miscategorization to reconcile flyaway support costs. Deletion of 5 Moving Target Simulators (MTS). Deletion of 2184 STINGER Launch Simulator (STLS) eject Missiles. Desert Storm

13b. (U) Cost Variance Analysis (Cont'd):
supplemental for retrograde of missiles deployed to SWA. Increased TPF requirement/refined estimate. Correction of miscategorization of support element reported as flyaway.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised escalation indices (Economic)		-4.2
Additional STINGER-RMP missile buy in FY 93 of 300 missiles (Quantity)	+7.8	+11.8
Schedule change for stretch out of production (Schedule)	+8.2	+12.9
Current and prior inflation Offset (Estimating)	+2.0	+2.8
Revised estimate for production associated with 300 new missiles (Estimating)	+8.8	+13.1
Current and prior inflation offset (Support)	+0.5	+0.7
Revised FY 91 estimate incorporating adjusted in-house and test requirements (Estimating)	+3.4	+5.0
Desert Storm supplemented retrograde transferred from MIPA to OMA funding (Support)	-8.7	-12.7
Deletion of Total Package Fielding funding from outyear budget (Support)	-7.4	-11.8
Additional support associated with the FY 93 missile buy (Support)	+0.6	+0.8
Procurement Subtotal	+15.2	+18.4

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.082	--	-0.013	0.004	--	-0.019	--	-0.002	-0.030	0.052

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) RMP FY89-PRODUCTION:	Initial Contract Price		
	Target	Ceiling	Qty
RAYTHEON, BEDFORD, MA DAAH01-90-C-0427, FFP Award: April 13, 1990 Definitized: June 25, 1991	$45.1	N/A	1383

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$45.1	N/A	1383	$45.1	$45.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract Performance reporting is not required for this FFP contract. Contract quantity includes all customers.

(U) RMP FY90-PRODUCTION:	Initial Contract Price		
	Target	Ceiling	Qty
General Dynamics, Rancho Cucamonga, CA DAAH01-91-C-0025, FFP Award: October 5, 1990 Definitized: October 5, 1990	$29.9	N/A	1021

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$71.5	N/A	2375	$71.5	$71.5

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract Performance reporting is not required for this FFP contract. The entire contract quantity is for the Army.

(U) RMP FY91-PRODUCTION:

	Initial Contract Price		
	Target	Ceiling	Qty
GENERAL DYNAMICS, RANCHO CUCAMONGA, CA DAAH01-91-C-0678, FFP Award: September 5, 1991 Definitized: September 5, 1991	$114.2	N/A	4413

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$135.1	N/A	5514	$135.1	$135.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract Performance Reporting is not required for this FFP contract. Contract quantity includes all customers. Contract increased due to exercising of options for 1101 missiles. Options were exercised which increased FY 91 quantity to 5514 missiles.

(U) RMP FY91 PRODUCTION:

	Initial Contract Price		
	Target	Ceiling	Qty
GENERAL DYNAMICS, RANCHO CUCAMONGA, CA DAAH01-92-C-0252, FFP Award: May 13, 1992 Definitized: N/A	$120.0	N/A	2863

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$120.0	N/A	2863	$120.0	$120.0

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Contract performance reporting is not required for this FFP contract. Contract quantity includes all customers.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 84.6% (11 yrs/13 yrs)

(2) Percent Program Cost Appropriated: 99.1% ($1505.7 / $1518.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	49.3	-	-	-	49.3
Procurement	1456.4	8.4	4.8	-	1469.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1505.7	8.4	4.8	-	1518.9

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1983				20.3	20.0	20.0	20.0	4.9
1984								3.8
1985				4.5	5.0	5.0	5.0	3.4
1986				15.5	17.5	17.5	17.5	2.8
1987				3.3	3.8	3.8	3.8	2.7
1988				2.5	3.0	3.0	3.0	3.0
Subtot	9			46.1	49.3	49.3	49.3	
Appropriation: 2032 Missile Procurement, Army								
1985	2360		158.9	167.7	198.9	198.9	198.6	3.4
1986	2909		153.4	174.7	212.2	211.7	211.3	2.8
1987	3541		151.4	157.8	199.2	199.2	199.2	2.7
1988	3942		124.4	129.8	169.7	169.7	169.7	3.0
1989	6750		180.4	177.9	241.3	241.3	231.4	4.2
1990	2375		76.9	83.4	116.8	109.7	81.4	4.0
1991	6922		184.6	179.1	257.8	193.6	54.8	4.3
1992				17.5	25.8	14.3	9.9	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
1993	300		20.6	23.0	34.7	6.1	1.9	2.4
1994				5.4	8.4			2.4
1995				3.0	4.8			2.3
Subtot	29099		1050.6	1119.3	1469.6	1344.5	1158.2	
Grand Total	29108		1050.6	1165.4	1518.9	1393.8	1207.5	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The steady state, full rate annual production approved by the Army Systems Acquisition Review Council (ASARC) in June 1983 was 7200.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		8.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		4.8		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

Currently, the STINGER-RMP program has no planned production after FY 93

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	9/9
Procurement	21665/21665

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The STINGER-RMP Baseline Cost Estimate (BCE), dated July 1989 was the source document for developing the Operating and Support (O&S) Costs. Year 2002 was selected for O&S Cost Analysis as it depicted a typical year for sustainment activities with all 59059 missiles produced and deployed. Numbers of personnel for cost estimating were derived from the organizational structure of the 2nd BTN, 67th ADA, Port Riley, KS. Attrition rates, training costs and loss rates were obtained from the MOS Training Cost Handbook, OMA MPA Cost Factor Handbook and historical data. An AMC directed value of the 1440 miles per year was utilized in determining Petroleum, Oil and Lubricants (POL) requirements with POL diesel costs estimated at the consumption rate of 10 miles per gallon. STINGER-RMP has no antecedent system.

18a. (U) Operating and Support Costs (Cont'd):

Note: The latest BCE for Operating and Support (O&S) was developed in accordance with the new streamlining policy per DA. This excluded certain O&S cost elements; therefore, the O&S represents cost from the last full BCE (Qty 59059 in lieu of 29108).

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Missile	Avg Annual Cost Per Antecedent Missile
Personnel	3.0	N/A
O&S Consumables	0.0	N/A
Direct Depot Maint	0.4	N/A
Sustain Invest	0.0	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	0.0	N/A
Total	3.4	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Depot Maintenance	2.7	1.9	1.2	---	5.8
Cont Log Spt (CLS)	0.3	---	---	---	0.3
Sustaining Eng	0.4	---	---	---	0.4
Other	0.2	---	---	---	0.2
Total	3.6	1.9	1.2	---	6.7

Depot Maintenance: Provide for repair and overhaul of the STINGER system.

N-2 AFX

92-103

*** UNCLASSIFIED ***

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AFX

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
AFX

2. DoD Component: Navy

Joint Participants:
Anticipate designation as Joint Program with USAF at MSI

3. Responsible Office and Telephone Number:
AFX Program Manager Direct Reporting CAPT Jeffrey Cook
PMA-235 1421 Jefferson Davis Hwy Assigned: January 4, 1991
Arlington, VA 22243-1235 AV 222- 2027
COMM (703) 692-2027

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0604233N Project D2129

5. Related Programs:
In compliance with Congressional direction, JIAWG efforts are supported by the Advanced Tactical Fighter, PE 0604239F Light Armed Scout Helicopter, PE 0604223A and the AFX program. PE 0604242F, Advanced Strike/Interdiction (AFX) Aircraft Studies, supports the Air Force unique requirements for the AFX program. There is no unnecessary duplication of effort.

No Security Objection
to Open Publication
~~(AS AMENDED)~~
93-C-0407
MAY 24 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

6. Mission and Description:
This program in concert with F/A-18E/F, will fulfill present-day A-6, F-14 and F/A-18C/D missions. AFX will meet this objective by introducing an aircraft with superior range, survivability and other characteristics to counter the threat for 2005 and beyond. Moreover, as a future joint program, AFX is slated to replace the Air Force F-117's, F-15E's and F-111's. The primary missions of the multi-mission aircraft will be Strike Warfare (STW), Anti-Surface Warfare (ASUW) and Anti-Air Warfare (AAW). The aircraft will be capable of locating, identifying and destroying heavily defended targets in all weather conditions, using conventional and nuclear weapons in an environment of multi-layered surface and airborne defensive systems. This aircraft will operate from aircraft carriers and land bases, day and night. The AFX will make maximum use of the common avionics specification addressed in the Joint Integrated Avionics Working Group (JIAWG).

7. Program Highlights:
a. Significant Historical Developments --
The Tentative Operational Requirement (TOR) for the AFX Aircraft was signed by the Chief of Naval Operations on 12 June 1991. The Joint Requirements Oversight Council (JROC) of the Joint Chiefs of Staff validated the AFX Mission Need Statement (MNS) on 19 June 1991. The Defense Acquisition Board (DAB) approved AFX for Milestone 0 on 28 June 1991. The Acquisition Decision Memorandum was signed 3 July 1991. Five (5) contracts valued at approximately $20 million each for AFX Concept Exploration and Definition (CE&D) were awarded on 30 December 1991. Each contractor is concentrating on key "design critical" trade-offs with associated break points. The results of the contractor's trade studies, along with those of the USN and USAF AFX Cost and Operational Effectiveness Analyses (COEAs) served as the basis for USN/USAF development of the AFX Operational Requirements Document (ORD), and will support the OSD AFX Program Review prior to release of the Demonstration and Validation (D&V) RFP. The USN and USAF COEAs will continue and will support the MS I DAB. The ORD was approved and signed by both the CNO and CSAF on 9 November 1992. The Navy acquistion strategy planned for downselect to a single D&V contractor. The FY1993 Authorization Act subsequently required a revised acquisition plan providing for "at least two prototypes of each of the two most promising proposals received from concept exploration" for D&V. The AFX D&V phase will be based on a full and open competition among U.S. aerospace contractors (i.e, not limited to the CE&D contractors) consistent with FY93 Congressional legislation. The Navy acquisition plan is structured to select two D&V contractors, each of whom will conduct risk reduction tasks and build and fly two prototype aircraft. The D&V solicitation will contain provisions which would allow downselect to one contractor in the event it is programmatically effective and has Congressional approval.

AFX, December 31, 1992

7a. Program Highlights (Cont'd):

This is an RDT&E only SAR IAW 10 USC 2432. This is an initial SAR.

b. Significant Developments Since Last Report --
This system will satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
ALL COST AND SCHEDULE ESTIMATES ARE NOTIONAL PENDING EVALUATION OF D&V PROPOSALS, SELECTION OF CONTRACTORS AND DESIGNS, AND MILESTONE I APPROVAL. AN ACQUISITION PROGRAM BASELINE WILL NOT BE ESTABLISHED UNTIL MILESTONE I. NUNN MCCURDY UNIT COST REPORTING IS NOT APPLICABLE FOR RDT&E ONLY SARS.

9. Schedule:

a. Milestones --

	Planning Estimate	Approved Program	Current Estimate
MS 0 DAB	JUN 91	N/A	JUN 91
MS I	MAY 94	N/A	MAY 94

THE ABOVE SCHEDULE IS NOTIONAL PENDING EVALUATION OF D&V PROPOSALS, SELECTION OF CONTRACTORS AND DESIGNS, AND MILESTONE I APPROVAL. AN ACQUISITION PROGRAM BASELINE WILL NOT BE ESTABLISHED UNTIL MILESTONE I.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY94 President's Budget Research and Development Descriptive Summary

Approved Program: None.

10. Performance Characteristics:

a. Performance Characteristics -- None.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate: None.

Approved Program: None.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	17937.4	0.0	17937.4
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	17937.4	0.0	17937.4
Escalation	4893.0	0.0	4893.0
Development (RDT&E)	(4893.0)	(0.0)	(4893.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	22830.4	0.0	22830.4

ALL COST AND QUANTITY ESTIMATES ARE NOTIONAL PENDING EVALUATION OF D&V PROPOSALS, SELECTION OF CONTRACTORS AND DESIGNS, AND MILESTONE I APPROVAL. AN ACQUISITION BASELINE WILL NOT BE ESTABLISHED UNTIL MILESTONE I.

b. Quantity --			
Development (RDT&E)	16	N/A	16
Procurement	0	N/A	0
Total	16	N/A	16

Note: Excludes 16 RDTE prototypes from the SAR Baseline and 16 from the Current Estimate that are not considered fully configured.

11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
FY94 President's Budget dated April 8, 1993.

Approved Program: None.

12. Program Acquisition/Current Procurement Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	22830.4	0.0	0.0	22830.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	22830.4	-	-	22830.4

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	17937.4	0.0	0.0	17937.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	17937.4	-	-	17937.4

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 18.8% (3 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 1.2% ($282.0 / $22830.4)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	282.0	399.2	1204.2	20945.0	22830.4
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	282.0	399.2	1204.2	20945.0	22830.4

ALL COST AND SCHEDULE ESTIMATES ARE NOTIONAL. AN ACQUISITION PROGRAM BASELINE WILL NOT BE ESTABLISHED UNTIL MS I.

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1991				124.0	126.1	125.1	118.9	4.3
1992								2.8
1993				145.9	155.9	69.0	7.3	2.4
1994				365.1	399.2			2.4
1995				1076.7	1204.2			2.3
1996				1223.9	1399.6			2.3
1997				1217.7	1423.3			2.2
1998				906.2	1082.5			2.2
1999				503.4	614.6			2.2
2000				795.1	992.0			2.2
2001				1781.7	2271.8			2.2
2002				2655.1	3459.9			2.2
2003				3339.2	4447.1			2.2
2004				1913.7	2604.8			2.2
2005				1207.7	1679.9			2.2
2006				682.0	969.5			2.2
Subtot				17937.4	22830.4	194.1	126.2	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

Grand Total				17937.4	22830.4	194.1	126.2	

Excludes 16 RDT&E prototypes from the SAR Baseline and 16 from the Current Estimate that are not considered fully configured.

17. Production Rate Data:

a. Production Baseline Rate

None. Not applicable for RDT&E only SAR.

b. Not applicable for Pre-Milestone II programs.

c. Deliveries (Plan/Actual) -- None.

d. Not applicable for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

A-19 LONGBOW HELLFIRE

92-049

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 1992

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MAY 25 1993
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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
Longbow HELLFIRE - subsystem of the AH-64 APACHE Weapon System

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
PROJECT MANAGER
AIR-TO-GROUND MISSILE SYSTEMS
ATTN: SFAE-MSL-HD
RSA, AL 35898-5610

COL CHARLES W. GREER
Assigned: February 3, 1992
AV 746-1365 COMM (205) 876-1365

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 64816 Project DC13, DC27 (Shared)
PROCUREMENT:
APPN 2032 ICN C70300 (Army)

[redacted]

[redacted]

OASD(PA) DFOISR 93-C-655

[redacted]

5. (U) Related Programs:
AH-64 Longbow Apache Helicopter; Laser HELLFIRE

6. (U) Mission and Description:
HELLFIRE is an air-to-ground missile system designed to defeat individual hardpoint targets and minimize exposure of the delivery vehicle to enemy fire. The missile configuration has the capability for modular seeker replacements. A version of the missile utilizing a laser seeker, laser HELLFIRE, is presently in production and a version utilizing a radar frequency seeker, Longbow HELLFIRE, is in the middle stage of engineering and manufacturing development. Longbow HELLFIRE and Laser HELLFIRE are complementary and neither missile replaces another missile system in the air-to-ground role.

Longbow HELLFIRE will be employed on the AH-64 Apache helicopter and will provide the capability to conduct battle both day and night in adverse weather and with battlefield obscurants present. Longbow also offers a fire and forget capability which complements the semi-active laser HELLFIRE missile. The Longbow HELLFIRE Missile contains a Radar Frequency Seeker which will provide a lock-on before launch (LOBL) or lock-on after launch (LOAL) capability, depending on target range and movement parameters. Longbow will not change the AH-64 mission or role, but will provide for increased mission effectiveness by enhancing lethality and survivability. It is envisioned that Longbow HELLFIRE will be used on the Comanche.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In 1981, the U.S. Army Aviation Applied Technology Directorate, Fort Eustis, Virginia, conducted competition and awarded parallel competitive technology demonstration contracts to Martin Marietta Corporation (MMC) and Westinghouse Electric Corporation (WEC) for a fire control radar to be integrated and tested on the AH-64 Apache. In late 1981, after a series of study efforts, a classified program was initiated for a millimeter wave radar seeker for the HELLFIRE Modular Missile System which, in conjunction with the fire control radar, yielded a total systems approach for Apache. In 1982, WEC and MMC were again awarded parallel competitive contracts for the first phase of this program named the Critical Technology Demonstration (CTD). During the three-plus years of the CTD program, both MMC and WEC demonstrated that the technology was in hand for further systems development. As a result of a Government In-Process Review in August 1985, a contract was awarded in November 1985 to MMC and WEC, as a joint venture (JV), for preliminary design of the tactical Longbow System. This was followed in August 1986 by the award of a Proof of Principle demonstration contract to the JV. An Initial Design Phase contract was awarded to the JV in September 1989. Proof of principal of the Longbow missile was accomplished 11 Apr 90. The Defense Acquisition Board (DAB) granted approval for engineering and

7a. (U) Program Highlights (Cont'd):

manufacturing development (EMD) of the Longbow Missile 5 Dec 90. A letter contract for EMD of the Longbow missile was awarded 26 Dec 90 and definitized 7 May 91.

b. (U) Significant Developments Since Last Report -- The critical design review (CDR), less the transceiver was conducted 22 through 26 Jun 92. The CDR for the transceiver is planned for Aug 93. The initial Production Readiness Review (PRR), less the transceiver section, was successfully completed 6 Oct 92. The transceiver initial PRR is scheduled for Sep 93.

A Special Program Review (SPR) to assess the Longbow HELLFIRE Program and define funding strategies to support Longbow Apache, fire control radar, and missile programs was held in Aug 92. To better align the Longbow HELLFIRE program with the Longbow Apache program, the SPR directed the following changes: slip First Unit Equipped and Initial Operational Capability dates 8 and 9 months respectively, increase development funds by approximately 20 percent, change milestones associated with component and system qualification tests, increase procurement quantities from 10,896 to 13,311, delay initiation of procurement by 1 year, stretch the procurement program from FY 94 - FY 01 to FY 95 - FY 08, and adjust related baseline schedules associated with Milestone III. The directed changes result in an increase in development and procurement costs. The increase in procurement costs is due to the delay and stretchout of the procurement program. Since the SPR the procurement program has been revised to span the years FY 95 - FY 06.

The Longbow HELLFIRE Missile System is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are no breaches to the approved Acquisition Program Baseline (APB), 13 May 93. There is a Nunn/McCurdy program acquisition unit cost breach.

(b)(1)

9d. (U) **Schedule (Cont'd)**:

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

10. (U) **Performance Characteristics**:

(b)(1)	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	303.4	358.2	358.2
Procurement	1344.7	2396.4	2396.4
Flyaway	(1323.7)		(2367.7)
Other Wpn Sys Cost	(3.9)		(10.5)
Peculiar Support	(17.1)		(18.2)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	1648.1	2754.6	2754.6
Escalation	542.2	787.3	787.3
Development (RDT&E)	(28.2)	(25.0)	(25.0)
Procurement	(514.0)	(762.3)	(762.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2190.3	3541.9	3541.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	10896	13311	13311
Total	10896	13311	13311

Note: Excludes 67 RDTE prototypes from the SAR Baseline and 67 from the Current Estimate that are not considered fully configured.

(1) An LRIP I quantity of 364 and an LRIP II quantity of 1050 is planned.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 08 March 1991.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3541.9	2168.5	3541.9
(2) Quantity	13311	10896	13311
(3) Unit Cost	0.266	0.199	0.266
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY91$)	2754.6	1671.7	2754.6
(2) Unit Cost	0.207	0.153	0.207
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY91$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Unit Cost	N/A	N/A	N/A

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.067	33.67
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	2415	22.16
(4) PAUC (BY91$)	0.054	35.29
(5) CPUC (BY91$)	0.000	N/A

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.067	33.67
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	2415	22.16
(4) PAUC (BY91$)	0.054	35.29
(5) CPUC (BY91$)	0.000	N/A

g. (U) Initial SAR (DEC 90)

(1) Program Acquisition Cost (TY$) -- 2190.3
(2) Program Acquisition Cost (BY$) -- 1648.1

h. (U) Unit Cost Changes.

(1) (U) PAUC --

Increases in the PAUC are caused by an underestimation of the complexity of the transceiver and cost of system test and evaluation. Also the estimating methodology was changed to reflect a peak production rate of 125 per month on a multi-shift basis versus a rate of 225 per month on a single shift basis. Government and contractor fixed costs (Program Management, Test and Evaluation, Engineering Services, ECO's) were also included to cover the additional four years of procurement.

(2) (U) CPUC --

None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

(U) Delaying initiation of production by one year and stretching the procurement program from FY 94 - FY 01 to FY 95 - FY 06 is estimated to increase the total procurement cost by $8.1M.

j. (U) Program Management and Control.

Military: COL Charles W. Greer, PM, Air-to-Ground Missile Systems Project Office; Civilian: Mr. George G. Williams, PEO, Tactical Missiles

k. (U) Cost Control Actions.

The program manager pursues cost controls through the use of a cost-plus-incentive fee (CPIF) engineering and manufacturing development contract with an award fee tied to demonstration

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd): milestones and risk management. Active producibility, engineering, and planning (PEP) and design-to-unit production cost (DTUPC) programs are also utilized. Interdisciplinary concurrent engineering teams are used to perform risk assessments. Firm-fixed price not-to-exceed options are available for the long lead items/initial production facilities and first low-rate initial production contracts.

1. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): JV MMC/WEC
(2) Contract Title: LONGBOW
(3) Contract Number:DAAH01-91-C-0057
(4) Actual Cost of Work Performed (ACWP) to date: 144.6
(5) Percent contract completed (BCWP/target cost): 52.00
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-1.6/-3.62%	$-2.4/-5.15%
Previous SAR	N/A	N/A
Current values	$-10.3/-7.25%	$-10.9/-7.53%
Change from the baseline SAR	$-8.7/-3.63%	$-8.5/-2.38%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

Effective with the Jun 92 Cost Performance Report an over-target baseline (OTB) was implemented. The cumulative variance to date includes cost and schedule variances against the OTB as well as those existing against the prior baseline at the time the OTB was implemented. The primary contributor to the negative cost and schedule variances is the transceiver. Other much smaller contributors are the inertial measurement system, exciter, software and system engineering design.

(8) (U) Impact of Variances on Contract. -

The Program Manager is actively working with the contractor to develop corrective action plans to minimize the unfavorable balances. The impact of the variances on price at completion, if the trend is sustained, would be an approximate 12% overrun of the initial contract price.

(9) (U) Impact of Variances on Unit Costs. -

The variances are against an engineering and manufacturing development contract and have minimal impact on the procurement unit cost.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	331.6	1858.7	0.0	2190.3
Previous Changes:				
Economic	-3.4	-51.8	-	-55.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.6	+34.0	-	+33.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.0	-17.8	-	-21.8
Current Changes:				
Economic	-5.4	-145.9	-	-151.3
Quantity	-	+413.7	-	+413.7
Schedule	-	+8.1	-	+8.1
Engineering	-	-	-	-
Estimating	+61.0	+1029.5	-	+1090.5
Other	-	-	-	-
Support	-	+12.4	-	+12.4
Subtotal	+55.6	+1317.8	-	+1373.4
Total Changes	+51.6	+1300.0	-	+1351.6
Current Estimate	383.2	3158.7	-	3541.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	303.4	1344.7	0.0	1648.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.4	+24.0	-	+23.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.4	+24.0	-	+23.6
Current Changes:				
Quantity	-	+287.4	-	+287.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+55.2	+732.6	-	+787.8
Other	-	-	-	-
Support	-	+7.7	-	+7.7
Subtotal	+55.2	+1027.7	-	+1082.9
Total Changes	+54.8	+1051.7	-	+1106.5
Current Estimate	358.2	2396.4	-	2754.6

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Estimating: Reduction in hardware requirements for qualification.

Procurement
Economic: Revised escalation indices.
Estimating: Change in estimating methodology, includes not-to-exceed price options for all-up-rounds.

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-5.4
Adjustment for Current & Prior Inflation. (Estimating)	+2.8	+2.9
Underestimation of the complexity of the transceiver and cost of system test and evaluation. (Estimating)	+52.4	+58.1
RDT&E Subtotal	+55.2	+55.6
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-145.9
Total Variance associated with increase of 2415 units.	+293.5	+422.6
Quantity variance resulting from increase of 2415 units. (Quantity)	+287.4	+413.7
Estimating variance associated with quantity increase. (Estimating)	+6.2	+8.9
Change in production schedule from FY 94 - FY 01 to FY 95 - FY 06. (Schedule)	--	+8.1
Changed methodology to reflect peak production rate of 125/month on multi-shift basis, vs 225/month on single shift basis. (Estimating)	+667.6	+937.5
Addition of 4 years of Gov't/OGA fixed cost and contractor engineering services. (Estimating)	+58.8	+83.1
Cost for an additional 2415 deicing domes. (Support)	+1.1	+3.3
Data cost associated with 4 additional years of procurement. (Support)	+6.6	+9.1
Procurement Subtotal	+1027.7	+1317.8

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.201	-0.016	-0.005	0.001	--	0.084	--	0.001	0.065	0.266

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) LONGBOW:	Initial Contract Price		
	Target	Ceiling	Qty
JV MMC/WEC, Orlando, FL DAAH01-91-C-0057, CPIF/AF Award: December 26, 1990 Definitized: May 7, 1991	$265.6	N/A	67

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$265.6	N/A	67	$290.5	$297.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.6	$-2.4
Cumulative Variances To Date (12/31/92)	$-10.3	$-10.9
Net Change	$-8.7	$-8.5

Explanation of Change:

The primary contributor to the negative cost and schedule variances is the transceiver. Other much smaller contributors are the inertial measuring system, exciter, software and system engineering design. The Program Manager is actively working with the contractor to develop corrective action plans to eliminate, offset or minimize the unfavorable balances. The negative schedule variance represents a behind schedule condition of approximately 2 months, which will have minimal program impact. The impact of the variances on price at completion, if the trend is sustained, is shown above. There is no impact of the variances on unit costs.

During a government team review of the contractor's projected cost at completion it was determined that the performance measurement baseline was underbudgeted and unrealistic. The contractor subsequently requested and received approval to go to an over target baseline (OTB). The cumulative variance to date includes cost and

15. (U) **Contract Information (Cont'd)**:
schedule variances against the OTB as well as those existing against the prior baseline at the time the OTB was implemented.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 18.8% (3 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 6.8% ($240.9 / $3541.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	240.9	107.3	35.0	-	383.2
Procurement	-	-	41.4	3117.3	3158.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	240.9	107.3	76.4	3117.3	3541.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1991			59.8	59.8	61.2	61.2	60.8	4.3
1992			94.1	94.1	98.7	98.6	95.6	2.8
1993			75.4	75.4	81.0	45.7	2.2	2.4
1994			97.7	97.7	107.3			2.4

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1995			31.2	31.2	35.0			2.3
Subtot			358.2	358.2	383.2	205.5	158.6	
Appropriation: 2032 Missile Procurement, Army								
1995		10.1		36.1	41.4			2.3
1996	364		188.8	164.2	192.7			2.3
1997	1050		211.3	212.2	254.5			2.2
1998	450		121.8	122.5	150.1			2.2
1999	1525		231.6	233.3	292.3			2.2
2000	1500		232.5	234.2	299.9			2.2
2001	1500		231.7	233.4	305.4			2.2
2002	1500		229.7	231.4	309.5			2.2
2003	1500		227.2	228.8	312.7			2.2
2004	1500		222.8	229.8	321.0			2.2
2005	1500		223.3	228.1	325.6			2.2
2006	922	4.5	232.4	242.4	353.6			2.2
Subtot	13311	14.6	2353.1	2396.4	3158.7			
Grand								

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
Total	13311	14.6	2711.3	2754.6	3541.9	205.5	158.6	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Not required for pre-Milestone III programs.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		41.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		3117.3		N/A	N/A

Not required for pre-Milestone III programs.

c. (U) Deliveries (Plan/Actual) -- None.

17d. (U) **Production Rate Data (Cont'd)**:

d. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 10896 - @ Peak Rate: 225.0/mo			
FY 91 Base-Year $	0.100	0.158	0.000
Then Year $	0.200	0.220	0.000
@ Qty 1690 (1st three years) - @ Peak Rate: 52.0/mo			
FY 91 Base-Year $	0.200	0.300	0.000
Then Year $	0.300	0.387	0.000

18. (U) **Operating and Support Costs**:

a. (U) Assumptions and Ground Rules --

Operation and support costs for Longbow HELLFIRE are costed under the philosophy of a "certified round" concept. The sustainment phase cost are for FY 97 through FY 29. The following efforts are considered applicable:

- Replenishment spares for support equipment.
- Annual overhaul of Longbow HELLFIRE equipment - ten percent of missiles in storage will be checked annually. Of the items checked, those that fail will be shipped to the depot for overhaul and return. Costs are based on predicted failure rate and average cost to repair.
- Transportation costs associated with annual overhaul.
- System Project Management
- Surveillance Program.

There is no antecedent system.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Missile	Avg Annual Cost Per Antecedent
Fielding	0.0	N/A
Sustainment	0.1	N/A
Total	0.1	N/A

Estimated average annual cost per missile for sustainment is $6,337. Sustainment cost are defined in Section 18a.

c. (U) Contractor Support Costs -- None.

92-939

A-11 CSSCS

*** UNCLASSIFIED ***

DK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CSSCS

AS OF DATE: December 31, 1992

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MAY 25 1993 21

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Combat Service Support Control System (CSSCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM CSSCS
ATTN: SFAE-CC-CSS
BLDG 1908
FT BELVOIR, VA 22060-5375

COL JAMES R. STEVERSON
Assigned: July 30, 1990
AV 656-5312 COMM (703) 806-5312

4. Program Elements/Procurement Line Items:

RDT&E:
PE 63805 (Shared) Project D091
PROCUREMENT:
APPN 2035 ICN W34600 (Army)
APPN 2035 ICN BA9706 (Army)

OASD(PA) DFOISR 93-C-656

5. Related Programs:
CSSCS is an integral part of the Army Tactical Command and Control System. Other inter-related programs are: Maneuver Control System (MCS), All-Source Analysis System (ASAS), Advanced Field Artillery Tactical Data System (AFATDS), Forward Area Air Defense Command, Control (FAADC2) System and ATCCS Common Hardware and Software, and Standard Integrated Command Post Systems (SICPS).

No Security Objection
PUBLIC RELEASE
24 MAY 1993
SECURITY REVIEW, OSDCSINT, HQDA

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6. Mission and Description:
The Combat Service Support Control System (CSSCS) is one of the five Battlefield Functional Area (BFA) systems which comprise the Army Tactical Command and Control System (ATCCS). The CSSCS will support Fire Support, Air Defense, Maneuver Control, and Intelligence-Electronic Warfare BFA's in the Active Army, Army Reserve and National Guard components. The CSSCS will provide critical logistical, medical, and personnel information to force and theater level commanders in a timely, integrated and accurate fashion. This automated processing of critical data from the Combat Service Support (CSS) Standard Army Management Information Systems (STAMIS) and from subordinate organizational headquarters will be analyzed and integrated into informational reports for evaluating current and projected sustainment capabilities. The CSSCS will correct the deficiencies of the current manual CSS Command and Control (C2) system that severely hampers the ability of the CSS commanders to provide and sustain adequate support for the Air-Land battle.

The CSSCS also provides CSS Commanders and their Staffs automated C2 capabilities. Automated capabilities include: CSS planning, decision support, critical resource tracking, access to the ATCCS common battlefield picture, briefing support, preparation and dissemination of orders and information exchange with other ATCCS BFA systems.

The CSSCS will be comprised of ATCCS common hardware, Common ATCCS Support Software (CASS), CSSCS-unique software and any CSSCS-unique hardware identified during development. This hardware and software, housed in the Standard Integrated Command Post System (SICPS) family of shelters, will enable CSS commanders and staffs to receive, analyze, process, and disseminate essential and critical C2 information and thus to more effectively manage resources in support of Air-Land battle operations.

7. Program Highlights:

a. Significant Historical Developments --
PEO CCS chartered the CSSCS Project Management Office on 22 February 1988 to support decisions on the employment of resources and to communicate these decisions to support elements. During FY 1989, the Under Secretary of the Army decided that CSSCS would be managed as a Major Defense Acquisition Program. CSSCS was approved for Engineering and Manufacturing Development by the Army Systems Acquisition Review Council in December 1990. On 1 February 1991, the Version 3&4 software development contract was awarded to TRW. The CSSCS Version 3, Build 0 software was completed and turned over for technical testing by TRW in November 1991 on schedule. In addition, the CSSCS Version 3, Build 1 Critical Design Walkthrough (CDW) and Embedded Training Software Specification Review (SSR) was conducted at TRW during 4-8 Nov 91. From 19-24 Nov 91, a Marine Corps evaluation of the CSSCS software was conducted during a brigade Field Training Exercise (FTX) at Twentynine Palms, CA. The USMC was

7a. Program Highlights (Cont'd):

satisfied with the software performance and planned to monitor program development while working with TRW to develop a bridge to their system.

b. Significant Developments Since Last Report --
CSSCS conducted a combined CSSCS Early User Test and Evaluation (EUT&E) Test Integration Working Group (TIWG)/Army Experimental Site (AES) Experiment 92-05/06 In-Progress Review (IPR) at Ft. Lewis, WA from 6-10 Jan 92. On 8 Jan 92, the CSSCS Version 3 software was successfully demonstrated to the DISCOM Commander's conference participants at Ft. Lee, VA. The CSSCS Version 3, Build 0 software testing was completed and accepted by the government in Feb 92 on schedule. During the period 9-12 Mar 92, a combined CSSCS EUT&E TIWG and AES Experiment IPR was conducted at Ft. Lewis, WA. Major topics during this IPR included the status of the Operational Test and Evaluation Command (OPTEC)/Test and Evaluation Experiment Command (TEXCOM) Outline Test Plan, EUT&E Instrumentation Requirements, and TEXCOM plans for the conduct of the EUT&E. The three AES experiments leading up to the CSSCS EUT&E were reviewed: AES 91-31, CSSCS Data Flow; 92-05, CSSCS-MCS Communications; and AES 92-06, Pre-EUT&E. The preliminary Design Review (PDR) was completed at TRW from 16-20 Mar 92. AES Experiment 92-06, CSSCS Pre-EUT&E, wrapped up its first phase in May 92, as the Operational Facility (OPFAC) evaluation of the Version 3, Build 0 software was completed. On 22 Jun 92, LTG Wakefield, CG Combined Arms Support Command (CASCOM), signed a joint Memorandum for Record (MFR) with MG Harmon, PEO Command and Control Systems, which formalized several weeks of discussion regarding development and initial fielding of the Version3 software. The CSSCS Version 3 Critical Design Review (CDR) was held at TRW during 15-24 Jun 92. The CDR confirmed that the Version 3 software design was sound and ready for the EUT&E in Sep-Oct 92 and the Initial Operational Test & Evaluation (IOT&E) scheduled for Sep-Oct 93 at Ft. Hood, TX. From 13-17 Jul 92, CSSCS supported the ATCCS Systems Confidence Demonstration (SCD) at AES, Ft. Lewis, WA. Five CSSCS nodes participated in the SCD using Version 3.1 software. The primary purpose of the SCD was to demonstrate swivel chair interface between CSSCS and MCS. CSSCS Version 3.1 software was successfully evaluated by AES in conjunction with the SCD. On 29 Jul 92, the CECOM Project Coordination Board (PCB) and ASARC Ad Hoc Working Group was activated to start preparations for the CSSCS Milestone ASARC III review scheduled in Feb 94. During Sep-Oct 92, the CSSCS EUT&E successfully demonstrated that the system is easily learned, user friendly, and provides meaningful logistics data which assists the commander in assessing the sustainability and supportability of combat operations.

The CSSCS system is expected to satisfy mission requirements.

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There is a schedule breach to the Approved Acquisition Program Baseline (APB dated 31 Oct 91). A revised APB is being processed. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
ROC Approved	JUL 88	JUL 88	JUL 88
Solicitation Issued	JUN 90	JUN 90	JUN 90
ROC Revised	SEP 90	SEP 90	SEP 90
Milestone I/II (ASARC)	DEC 90	DEC 90	DEC 90
Dev Contract Award (V 3&4)	FEB 91	FEB 91	FEB 91
SDR Version 3	MAY 91	MAY 91	MAY 91
SSR Version 3	SEP 91	SEP 91	NOV 91
PDR Version 3	DEC 91	DEC 91	MAR 92
CDR Version 3	MAR 92	MAR 92	JUN 92
Begin Version 4 Prototyping	JUL 92	JUL 92	OCT 92(Ch-1)
Tech Test Version 3			
Start	NOV 92	NOV 92	FEB 93(Ch-1)
Complete	JAN 93	JAN 93	MAR 93(Ch-1)
Begin Version 4	MAR 93	MAR 93	SEP 93(Ch-1)
IOT&E Version 3			
Start	FEB 93	FEB 93	AUG 93(Ch-1)
Complete	APR 93	APR 93	OCT 93(Ch-1)
Milestone III (ASARC)	AUG 93	AUG 93	FEB 94(Ch-1)
OSD C3I Committee Review	SEP 93	SEP 93	MAR 94(Ch-1)
Begin Version 3 Fielding	APR 94	APR 94	JUN 94(Ch-1)
First Unit Equipped	APR 93	APR 93	OCT 93(Ch-1)
IOC Version 3	APR 94	APR 94	JUN 94(Ch-1)
PDR Version 4	SEP 93	SEP 93	SEP 93
CDR Version 4	DEC 93	DEC 93	DEC 93
Dev Contract Award Version 5	MAR 95	MAR 95	MAR 95
Tech Test Version 4			
Start	MAY 95	MAY 95	MAY 95
Complete	JUN 95	JUN 95	JUN 95
FOT&E Version 4			
Start	AUG 95	AUG 95	AUG 95
Complete	OCT 95	OCT 95	OCT 95
Begin Fielding Version 4	NOV 95	NOV 95	NOV 95

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
PDR Version 5	JUL 96	JUL 96	JUL 96
CDR Version 5	DEC 96	DEC 96	DEC 96
Tech Test Version 5			
Start	JUN 97	JUN 97	JUN 97
Complete	JUL 97	JUL 97	JUL 97
FOT&E Version 5			
Start	AUG 97	AUG 97	AUG 97
Complete	OCT 97	OCT 97	OCT 97
Begin Fielding Version 5	NOV 97	NOV 97	NOV 97
Complete Fielding CSSCS	SEP 01	SEP 01	SEP 03(Ch-1)
EUT&E Version3			
Start	N/A	N/A	SEP 92
End	N/A	N/A	OCT 92

(ROC) Operational Requirements Document
(SDR) System Design Review
(SSR) Software Specification Review
(PDR) Preliminary Design Review
(CDR) Critical Design Review
(IOT&E) Initial Operational Test and Evaluation
(EUT&E) Early User Test and Evaluation
(FOT&E) Follow-on Operational Test and Evaluation

b. Previous Change Explanations --

Changes to the Version 3 PDR, CDR, IOT&E, and FUE dates have all been realigned based on the establishment of a May 93 ATCCS test window. The individual builds within Version 3 have been accelerated resulting in the technical testing schedule to start in Nov 92 being accelerated to start in Aug 92.

c. Current Change Explanations --

(Ch-1) Current changes to the PM CSSCS schedule are from the cumulative effect of a new ATCCS test window for the CSSCS IOT&E, external test and experiment activities, and funding restraints which have limited development to essential work.

Specifically:
The Version 4 Prototyping date was delayed (to Oct 92 from Jul 92) because funding restraints made the Version 3 work the priority, since that is the Version required for the ASARC III. The Version 4 Development date was also moved (to Sep 93 from Mar 93) for the same

9c. Schedule (Cont'd):
reason.
The IOT&E date change (start to Aug 93 from May 93; end to Oct 93 from Jun 93) was due to the ATCCS test window being moved to that time period from the scheduled May-Jun 93 period. This change required the other schedule changes to be made.
The Complete Fielding CSSCS date (to Sep 03 from Sep 01) date was realigned based on new funding profiles.
The EUT&E date was added to document the successful completion of this major test.

d. References --

Development Estimate:
Army Acquisition Executive Memorandum, ASARC II, dated 26 Dec 90, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 Oct 91.

Approved Program:
AAE Approved Acquisition Program Baseline dated 31 October 1991.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Operational Temp (degF)	0-+120	0-+120	/ +40-+95	TBD	+40-+95
Relative Humidity (%)	10-80	10-80	/ 10-80	TBD	10 - 80
Portability (no. person carry)	2	1	/ 2	TBD	2
Equipment Set-up/Tear-down (hrs)	<=.5	<=.5	/ <=.5	TBD	<=.5
Mean Time Between Op Msn Failure (hrs)					
ACCS Hardware	220	220	/ 220	TBD	220
ACCS CHS & CSSCS Software (HW&SW)	210	210	/ 210	TBD	210
Automatic Msg Handling					
User Responsiveness					
Disp 24 Lines (sec)	1.0	.7	/ 5.0	TBD	1.0
Scroll (lines/sec)	20	28	/ 20	TBD	20
Error Feedback (sec)	1.0	.7	/ 1.0	TBD	1.0

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
User Help Req (sec)	3.0	2.1	/ 3.0	TBD	3.0
Auto-message handling					
Speed-in (sec)	10/500	7/500	/ 10/500	TBD	10/500
Speed-out (sec)	10/1000	7/1000	/ 10/1000	TBD	10/1000
Msg Trans and Receipt					
24 hr USMTF Trans	334	477	/ 334	TBD	334
24 hr Recpt&Process					
(million char)	6.9	9.86	/ 6.9	TBD	6.9
(STAMIS msgs)	4400	6286	/ 4400	TBD	4400
Capable of Update					
(every x hrs)	3	2	/ 3	TBD	3
Process All Info Rec					
(within x hrs)	3	2	/ 3	TBD	3
On-Line Query Resp Time (sec/min)	5/180	5/7	/ 2/3	TBD	5-180sec
Local Data File Update Response Time (sec/min) (sec)	5/180	5/7	/ 5/15	TBD	5-180sec

* USMTF is the abbreviation for United States Message Text Format.

b. Previous Change Explanations --

Operational temperature Current Estimate changed from 0-+120 degrees F to =40-+95 degrees to correct estimate in previous SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
Army Acquisition Executive Memorandum, ASARC II, dated 26 Dec 90, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 Oct 91.

Approved Program:
AAE Approved Acquisition Program Baseline dated 31 October 1991.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	114.5	114.5	124.8
Procurement	131.6	131.6	121.7
Flyaway	(122.2)		(117.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(9.4)		(3.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	246.1	246.1	246.5
Escalation	44.6	44.6	38.3
Development (RDT&E)	(11.5)	(11.5)	(10.4)
Procurement	(33.1)	(33.1)	(27.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	290.7	290.7	284.8

The unit of measure for CSSCS is the number of terminals (TCU or LCU)

b. Quantity --			
Development (RDT&E)	84	84	68
Procurement	1031	1031	1102
Total	1115	1115	1170

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
Army Acquisition Executive Memorandum, ASARC II, dated 26 Dec 90, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 Oct 91.

Approved Program:
AAE Approved Acquisition Program Baseline dated 31 October 1991.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	284.8	288.6	284.8
(2) Quantity	1170	1115	1170
(3) Unit Cost	0.243	0.259	0.243
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	13.5
Less CY Adv Proc	0.0	0.0	0.0
Plus FY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	13.5
(2) Quantity	0	0	108
(3) Unit Cost	N/A	N/A	0.125

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	126.0	164.7	0.0	290.7
Previous Changes:				
Economic	-2.8	-0.9	-	-3.7
Quantity	-	-	-	-
Schedule	-	+0.3	-	+0.3
Engineering	-	-	-	-
Estimating	+1.7	-0.3	-	+1.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.1	-0.9	-	-2.0
Current Changes:				
Economic	-0.8	-3.9	-	-4.7
Quantity	-	+11.4	-	+11.4
Schedule	-	+3.1	-	+3.1
Engineering	-	-	-	-
Estimating	+11.1	-18.5	-	-7.4
Other	-	-	-	-
Support	-	-6.3	-	-6.3
Subtotal	+10.3	-14.2	-	-3.9
Total Changes	+9.2	-15.1	-	-5.9
Current Estimate	135.2	149.6	-	284.8

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	114.5	131.6	0.0	246.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+0.1	-	+0.1
Engineering	-	-	-	-
Estimating	-0.2	-0.1	-	-0.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.2	-	-	-0.2
Current Changes:				
Quantity	-	+8.3	-	+8.3
Schedule	-	+0.1	-	+0.1
Engineering	-	-	-	-
Estimating	+10.5	-12.7	-	-2.2
Other	-	-	-	-
Support	-	-5.6	-	-5.6
Subtotal	+10.5	-9.9	-	+0.6
Total Changes	+10.3	-9.9	-	+0.4
Current Estimate	124.8	121.7	-	246.5

b. Previous Change Explanations --

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.8
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.2
Revision due to PY Reprogram funds not included in initial SAR (Estimating)	+2.9	+2.6

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Revision due to Change in Funding Profile (Estimating)	+7.8	+8.7
RDT&E Subtotal	+10.5	+10.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-5.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.2
Total Variance associated with increase of 71 units.	+8.4	+11.5
Quantity Variance units increased from 1031 to 1102. (Quantity)	+8.3	+11.4
Schedule Variance associated with Quantity Increase. (Schedule)	+0.1	+0.1
Change in procurement schedule for FY95 through FY03. (Schedule)	--	+3.0
Revised estimate due to Funding Profile Changes (Estimating)	-12.7	-18.5
Initial Spares (Support)	-5.6	-6.3
Procurement Subtotal	-9.9	-14.2

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.261	-0.007	-0.004	0.003	--	-0.005	--	-0.005	-0.018	0.243

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E -- CSSCS VERSIONS 3 & 4:	Initial Contract Price Target	Ceiling	Qty
TRW, INC, CARSON, CA DAAB07-91-C-N501, CPAF Award: February 1, 1991 Definitized: February 1, 1991	$61.6	N/A	0

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$71.5	N/A	0	$71.9	$74.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.1	$-0.2
Cumulative Variances To Date	$-0.6	$-0.8
Net Change	$-0.5	$-0.6

Explanation of Change:

Changes in the Initial Contract Price, Current Contract Price and Estimated Price at Completion is to correct these figures based on the SAR Review held with OSD. The initial SAR (Sep 91) and the December 1991 SAR reflected only contract prices without all fees and options being included.

The primary reason for the change in the cost variance is due to increased overhead and administrative (G&A) rates during 1992. The schedule variance is due primarily to the reprioritizing of software development work due to funding decrements and changes in the test schedule.

December is month 23 of a 60 month contract, scheduled to end in January 1996.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 41.2% (7 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 21.7% ($61.7 / $284.8)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY87-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2003)	Total
RDT&E	61.7	19.0	18.2	36.3	135.2
Procurement	-	13.5	16.9	119.2	149.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	61.7	32.5	35.1	155.5	284.8

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1987			2.2	2.2	1.9	1.9	1.9	2.7
1988			3.5	3.5	3.2	3.2	3.2	3.0
1989			5.1	5.1	4.8	4.8	4.8	4.2
1990			4.5	4.5	4.4	4.4	4.1	4.0
1991			8.9	8.9	9.1	9.1	9.0	4.3
1992			20.6	20.6	21.6	21.4	14.9	2.8
1993			15.6	15.6	16.7	3.8	0.2	2.4
1994			17.3	17.3	19.0			2.4
1995			16.2	16.2	18.2			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1996			11.0	11.0	12.6			2.3
1997			9.8	9.8	11.5			2.2
1998			5.1	5.1	6.1			2.2
1999			5.0	5.0	6.1			2.2
Subtot	68		124.8	124.8	135.2	48.6	38.1	
Appropriation: 2035 Other Procurement, Army								
1994	108		11.4	12.0	13.5			2.4
1995	133		13.9	14.7	16.9			2.3
1996	129		13.5	14.7	17.2			2.3
1997	127		13.0	13.8	16.6			2.2
1998	123		12.7	12.9	15.8			2.2
1999	120		12.3	12.5	15.6			2.2
2000	116		13.3	13.3	17.0			2.2
2001	113		13.0	13.0	17.0			2.2
2002	68		7.5	7.5	10.0			2.2
2003	65		7.3	7.3	10.0			2.2
Subtot	1102		117.9	121.7	149.6			

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
Grand Total	1170		242.7	246.5	284.8	48.6	38.1	

17. Production Rate Data:

a. Production Baseline Rate

CSSCS system hardware will be procured off the Common Hardware Software (CHS) and SAIC contracts managed by PM Common Hardware Software. Both contracts are for non-developmental items. The steady state full production rate for the CHS contract is identified as 200 units per month. The steady state full production rate for the SAIC contract is 300 units per month. Annual production rates for both contracts are determined based on the combined requirements of all the Automated Tactical Command and Control Systems (ATCCS) programs.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		13.5		N/A	N/A
Procurement Qty		108		N/A	N/A
Proc. Unit Cost	N/A	0.125	N/A	N/A	N/A
FY 1995					
Procurement Cost		16.9		N/A	N/A
Procurement Qty		133		N/A	N/A
Proc. Unit Cost	N/A	0.127	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		119.2		N/A	N/A

17b. Production Rate Data (Cont'd):

As the full production rates for the CHS contracts are based on the combined requirements of the ATOCS programs, cost and quantity variances cannot be determined on an individual program basis.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	68/68
Procurement	0/0

d. Approved Design-to-Cost Objective -- N/A.

The CSSCS will utilize Common Hardware equipment. There is no Design-to-Cost Objective for the program.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operation is for CSSCS to be fielded in both active and reserve units. The total manhours of operation per year for active duty units per device is 4745 hours during wartime, 2372.5 hours during peacetime, and 234 hours for reserve units. There are no new personnel costs involved as CSSCS will be operated by personnel currently assigned to those organizations receiving these devices. The present maintenance concept for the CHS hardware is contractor logistics support for the operational life of the equipment, not to exceed ten years. Contractor will establish Regional Support Centers (RSC), which will provide all repairs above the unit level. Unit level maintenance consists of preventive maintenance, replacement of Line Replaceable Units (LRU), and replacement of expendable items (cables, batteries, fuses, and filters). Internal repair of LRU's requiring removal of covers will not be performed by U.S. Army personnel. Units will exchange unserviceable LRU's for serviceable LRU's through assigned Intermediate Direct Support (IDS) facilities. The IDS will perform fault verification and ship unserviceable LRU's to the nearest RSC for repair. There is no antecedent equipment for the CSSCS. It will replace current manual and non-standard automated processes. PM CSSCS will not be provided funding for O&S costs. All O&S costs will be funded at the unit level after delivery.

The Average Annual Cost is for the entire CSSCS system and is based on sustainment from FY 94-21 (28 years). Source: Army Cost Position, August 1991.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CSSCS System	Avg Annual Cost Per Antecedent System
Personnel	0.3	N/A
O&S Consumables	0.6	N/A
Direct Depot Maintenance	0.5	N/A
Sustaining Investment	19.1	N/A
Other Costs	1.5	N/A
Total	22.0	N/A

c. Contractor Support Costs -- None.

A-6 BAT

92-035

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(QA)823)
PROGRAM: BAT

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION
AS AMENDED
MAY 27 1993
5

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):**
   BAT

2. (U) **DoD Component:** Army

3. (U) **Responsible Office and Telephone Number:**
   BAT PROGRAM MANAGER — COL Willie B. Nance
   PROGRAM EXECUTIVE OFFICE — Assigned: July 13, 1992
   TACTICAL MISSILES- ATTN: SFAE-MSL-XB AV 788-0307 COMM 205-842-0307
   REDSTONE ARS, AL 35898-7998

4. (U) **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 63754A Project D600
   PE 64754A (Shared) Project D636
   PE 64768A Project D641
   PROCUREMENT:
   APPN 2032 ICN CA6100 (Army)

[redacted]

[redacted]

[redacted]

OASD(PA) DFOISR 93-C-720

5. (U) Related Programs:
MULTIPLE LAUNCH ROCKET SYSTEM (MLRS), ARMY TACTICAL MISSILE SYSTEM (ATACMS), AND TRI-SERVICE STANDOFF ATTACK MISSILE (TSSAM).

6. (U) Mission and Description:
The BAT is an antiarmor top attack submunition with acoustic and infrared (IR) seekers working in tandem for autonomous attack of operating armored vehicles. BAT submunitions can be carried deep into enemy territory by a variety of delivery vehicles, then dispersed over numerous targets to selectively attack and destroy individual targets. Being a certified round, the BAT submunition has a low sustainment cost. The Army has approved a Pre-Planned Product Improvement (P3I) program to increase submunition lethality and allow attack of new target arrays to include cold stationary or dug-in targets, and SSM TELS. The BAT program does not replace another system.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
The program was established as a classified program and approved for execution 5 Jun 84. Phase I of the Proof of Principle (POP) program began Aug 84 with Northrop corporation as the prime contractor. Phase II of the POP commenced Jun 85 and was completed Apr 89. An Extended POP was approved May 89 to address specific technical issues which were later resolved. A successful Milestone II, Engineering and Manufacturing Development (EMD) review was completed May 91. The program was disestablished as a Special Access program and established as the BAT program Jun 91. An EMD contract was awarded 5 Jun 91 to Northrop Corporation.

b. (U) Significant Developments Since Last Report --
Subsystem Critical Design Reviews (CDRs) began in Jan 92, with successful completion of the System Integration CDR in May 92.

Engineering and Manufacturing Development (EMD) tests to date include the successful collection of acoustic and infrared (IR) data in support of BAT seeker hardware, algorithm, and simulation/modeling development. High Speed and Low Speed Wind Tunnel Testing was successfully completed allowing characterization of aerodynamic parameters and performance. Two Captive Flight Tests, (IR data collection/algorithm evaluation), two Suspended Platform Tests (Acoustic Subsystem evaluation), and five Infrared Signature Data Collection activities at various locations provided valuable and necessary data on threat vehicles required for the BAT submunition. Prototype and tactical hardware components have been used, tactical algorithms were exercised and modeling/simulation programs verified. Infrared signature data collected is being used by other Army programs and agencies. Countermeasure data was collected in conjunction with the above tests.

7b. (U) Program Highlights (Cont'd):

BAT and Army Tactical Missile System Project Offices in conjunction with Loral Inc, prime contractor for Army TACMS, completed an initial integration risk reduction program which successfully defined Army TACMS/BAT high speed dispense conditions and other significant integration trade studies and analyses. This activity with Army TACMS culminated in a successful Dec 92 sled test demonstration of the dispense of BAT submunitions in a supersonic environment.

The Tri-Service Standoff Attack Missile Defense Acquisition Board (DAB) was held 2 Nov 92 with the BAT Program briefed concurrently. Decision was made to continue the BAT and TSSAM Programs. Direction was given to immediately restructure BAT to a 54-month program so that it would align with the TSSAM program.

The BAT system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
A Joint Strategic Systems Committee/Conventional Systems Committee (CSC/SSC) Review of the Army Deep Fires Program was held 12 Feb 93. Direction was given to continue a revised BAT/TSSAM program with fewer quantities and to establish a BAT Preplanned Product Improvement (P3I) EMD program with Army TACMS P3I integration.

8. (U) Threshold Breaches:

There are no breaches to the DAE Approved Acquisition Program Baseline dated 13 May 93. There is a Nunn-McCurdy unit cost breach in Program Acquisition Unit Cost resulting from the RDT&E funds increase, and a reduction in the quantity to be procured. Details of the unit cost breach are provided in section 12.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone 0	JUN 84	N/A	JUN 84
Milestone I	FEB 85	N/A	FEB 85
Milestone II	MAY 91	MAY 91	MAY 91
Preliminary Design Review	MAY 91	MAY 91	MAY 91
EMD/FSD Contract Award	JUN 91	JUN 91	JUN 91
Critical Design Review Complete	MAR 92	MAY 92	MAY 92

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Prototype Production			
Start	DEC 92	APR 93	APR 93(Ch-1)
Complete	SEP 94	SEP 95	SEP 95(Ch-1)
Design Verification Test			
Start	JAN 93	MAY 93	MAY 93(Ch-1)
Complete	NOV 93	JUL 94	JUL 94(Ch-1)
First Prototype Unit Delivery	OCT 93	MAR 94	MAR 94(Ch-1)
Contractor Development Test			
Start	NOV 93	OCT 94	OCT 94(Ch-1)
Complete	SEP 94	SEP 95	SEP 95(Ch-1)
Long Lead Program Review	DEC 93	MAY 95	MAY 95(Ch-1)
Long Lead Contract Award for LRIP	JAN 94	JUN 95	JUN 95(Ch-1)
LRIP Program Review	NOV 94	OCT 95	OCT 95(Ch-1)
EMD/LRIP I Contract Award	NOV 94	NOV 95	NOV 95(Ch-1)
LRIP First Unit Delivery	N/A	NOV 96	NOV 96(Ch-1)
Submunition Readiness Date (IOC)	DEC 95	FEB 97	FEB 97(Ch-1)
Milestone III	DEC 96	NOV 98	NOV 98(Ch-1)
Production Contract Award	JAN 97	JAN 99	JAN 99(Ch-1)
First Production Unit Delivery	JAN 98	JAN 00	JAN 00(Ch-1)
P3I DEM/VAL	N/A	AUG 93	AUG 93(Ch-1)
P3I DEM/VAL	N/A	AUG 93	AUG 93(Ch-1)
P3I EMD Contract Award	N/A	MAR 97	MAR 97(Ch-1)
P3I EMD Contract Award	N/A	MAR 97	MAR 97(Ch-1)

b. (U) Previous Change Explanations --

Critical Design Review changed due to delay of subcontractors/vendors receiving finalized system requirements.

c. (U) Current Change Explanations --

(U) (Ch-1): Changes are due to restructure of BAT EMD to a 54-month program and the addition of P3I Demonstration/Validation and EMD.

d. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum (ADM), dated 15 May 1991, approval to enter Engineering and Manufacturing Development (EMD).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Weight (lbs)	44	44 / 44	TBD	44
Length (stowed) (ins)	36	36 / 36	TBD	36
Diameter (stowed) (ins)	5.5	5.5 / 5.5	TBD	5.5

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

Changed to correct the current estimate from the previous SAR to match the development estimate.

c. (U) Current Change Explanations --

(Ch-1) The Army TACMS P3I/BAT P3I program approved at the SSC/CSC changed the loadout of BATS in Army TACMS from 12 to 6. The Army TACMS P3I missile is an extended range version which carries fewer submunitions. The performance objectives for this loadout have not been determined.

d. (U) References --

(U) Development Estimate:
Acquisition Decision Memorandum (ADM), dated 15 May 1991, approval to enter Engineering and Manufacturing Development (EMD).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

BAT, December 31, 1992

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	702.1	991.6	991.6
Procurement	1569.9	1134.2	1134.2
Total Flyaway Cost	(1553.6)		(1128.0)
Other Weapons Systems Cost	(16.3)		(6.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	2272.0	2125.8	2125.8
Escalation	714.6	423.5	436.4
Development (RDT&E)	(29.5)	(68.2)	(75.5)
Procurement	(685.1)	(355.3)	(360.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2986.6	2549.3	2562.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	30993	18154	18154
Total	30993	18154	18154

Note: Excludes 33 RDTE prototypes from the SAR Baseline and 33 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Acquisition Decision Memorandum (ADM), dated 15 May 1991, approval to enter Engineering and Manufacturing Development (EMD).

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

BAT, December 31, 1992

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2562.2	2929.3	2562.2
(2) Quantity	18154	30993	18154
(3) Unit Cost	0.141	0.095	0.141
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY91$)	2125.8	2257.4	2125.8
(2) Unit Cost	0.117	0.073	0.117
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY91$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Unit Cost	N/A	N/A	N/A

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.046	48.42
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-12839	-41.43
(4) PAUC (BY91$)	0.044	60.27
(5) CPUC (BY91$)	0.000	N/A

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	0.046	48.42
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-12839	-41.43
(4) PAUC (BY91$)	0.044	60.27
(5) CPUC (BY91$)	0.000	N/A

g. (U) Initial SAR (SEP 91)

(1) Program Acquisition Cost (TY$) -- 2986.6
(2) Program Acquisition Cost (BY$) -- 2272.0

h. (U) Unit Cost Changes.

(1) (U) PAUC --

Change is due to programmatic decisions to increase RDT&E funds and to reduce procurement quantities. RDT&E funds were increased (1) to conduct BAT/Army TACMS Integration Risk Reduction Activity; (2) to realign BAT to the TSSAM program schedule as directed by the Nov 92 DAB; and (3) the addition of the BAT P3I EMD program as directed by the 12 Feb 93 SSC/CSC. Procurement quantities were also reduced as a result of the 12 Feb 93 SSC/CSC.

(2) (U) CPUC --

None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

As mentioned above, the realignment of BAT to the TSSAM program schedule added RDT&E funding and increased the length of the BAT EMD program, however, the reduced quantity of BATS as result of the SSC/CSC was the major contributor to the unit cost increase.

j. (U) Program Management and Control.

Military: COL Willie B. Nance, PM - BAT Project Office.

Civilian: Mr. George G. Williams, PEO - Tactical Missiles.

k. (U) Cost Control Actions.

BAT Program Manager required prime contractor to reorganize from matrix to a vertically integrated product management organization and

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd): to reduce workforce. Implemented proactive management and control tools which include program master network to more intensively manage program critical path, risk management tracking system for integrated schedule, cost and technical management by government/contractor responsible engineers, and a control room/operations center to monitor and manage program execution.

BAT PM plans to establish parameters in the restructured EMD contract cost, with technical and schedule milestones and independently assess performance against these milestones.

1. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): Northrop Corporation
(2) Contract Title: EMD
(3) Contract Number:DAAH01-91-C-A017
(4) Actual Cost of Work Performed (ACWP) to date: 184.2
(5) Percent contract completed (BCWP/target cost): 47.10
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-2.2/-5.70%	$-5.6/-12.50%
Previous SAR	N/A	N/A
Current values	N/A/0.00%	N/A/0.00%
Change from the baseline SAR	$+2.2/+5.70%	$+5.6/+12.50%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

As a result of decision to restructure BAT to a 54-month program to realign with TSSAM program schedule, Northrop was authorized to replan FY 93 work and to report actuals only during the process. This is an interim baseline pending finalization of the contract modification for the approved program restructure. Cost and schedule variances were set to zero as of December 92.

(8) (U) Impact of Variances on Contract. -

There is no impact of variance on contract.

(9) (U) Impact of Variances on Unit Costs. -

There is no impact of variances on unit costs.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	731.6	2255.0	0.0	2986.6
Previous Changes:				
Economic	-5.2	-67.7	-	-72.9
Quantity	-	-	-	-
Schedule	+3.6	+32.4	-	+36.0
Engineering	-	-	-	-
Estimating	+0.5	-12.9	-	-12.4
Other	-	-	-	-
Support	-	-8.0	-	-8.0
Subtotal	-1.1	-56.2	-	-57.3
Current Changes:				
Economic	-12.3	-84.6	-	-96.9
Quantity	-	-776.5	-	-776.5
Schedule	-	+92.6	-	+92.6
Engineering	+344.5	-	-	+344.5
Estimating	+4.4	+68.8	-	+73.2
Other	-	-	-	-
Support	-	-4.0	-	-4.0
Subtotal	+336.6	-703.7	-	-367.1
Total Changes	+335.5	-759.9	-	-424.4
Current Estimate	1067.1	1495.1	-	2562.2

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	702.1	1569.9	0.0	2272.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-0.3	-	-0.3
Engineering	-	-	-	-
Estimating	+0.4	-8.1	-	-7.7
Other	-	-	-	-
Support	-	-6.6	-	-6.6
Subtotal	+0.4	-15.0	-	-14.6
Current Changes:				
Quantity	-	-467.1	-	-467.1
Schedule	-	-	-	-
Engineering	+284.8	-	-	+284.8
Estimating	+4.3	+49.9	-	+54.2
Other	-	-	-	-
Support	-	-3.5	-	-3.5
Subtotal	+289.1	-420.7	-	-131.6
Total Changes	+289.5	-435.7	-	-146.2
Current Estimate	991.6	1134.2	-	2125.8

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Schedule: Rephased development effort for FY1992-FY1996.
Estimating: Current and prior inflation offset.

Procurement
Economic: Revised escalation indices.
Schedule: Revised schedule of submunition procurement from FY1995-FY1996 to FY2003-FY2006.
Estimating: Current and Prior year inflation offset.
Support: Change in projected engineering data costs.

13c. (U) **Cost Variance Analysis (Cont'd)**:

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-12.3
Adjustment for current year and prior year inflation. (Estimating)	+4.3	+4.4
Increased scope due to 54 mos. restructure and addition of P3I EMD. (Engineering)	+284.8	+344.5
RDT&E Subtotal	+289.1	+336.6
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-207.3
Decrease of 12839 units from 30993 to 18154.	-485.6	-680.4
Reduction of 12839 Units (Quantity)	-467.1	-776.5
Estimating changes associated with quantity decrease (Estimating)	-18.5	-26.6
Economic adjustment for negative program change (Economic)	N/A	+122.7
One year delay in start of production from FY94 to FY95. (Schedule)	N/A	+92.6
Adjustment of cost associated with change in learning curve assumptions based on quantity reductions. (Estimating)	+68.4	+95.4
Decreased support due to reduction of 12839 units. (Support)	-3.5	-4.0
Procurement Subtotal	-420.7	-703.7

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.096	-0.016	0.031	0.007	0.019	0.005	--	-0.001	0.045	0.141

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) EMD:

Northrop Corporation, Hawthorne, CA, CA
DAAH01-91-C-A017, CPIF/AF
Award: June 5, 1991
Definitized: June 5, 1991

	Initial Contract Price		
	Target	Ceiling	Qty
	$383.9	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$383.9	N/A	0	$419.4	$419.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.2	$-5.6
Cumulative Variances To Date (12/31/92)	$0.0	$0.0
Net Change	$2.2	$5.6

Explanation of Change:

As a result of decision to restructure BAT to a 54-month program to realign with TSSAM program schedule, Northrop was authorized to replan FY 93 work and to report actuals only during the process. This is an interim baseline pending finalization of the contract modification for the approved program restructure. Cost and schedule variances were set to zero as of December 92. Cost Performance Report (CPR) with full variance analysis against the FY 93 program will resume with the Mar 93 report (Jan 92 data). The change in the estimated price at completion results from a "bottoms up" assessment of contractor's estimate to complete the EMD contract. The revised EAC reflects a cost growth of $35.5M at price ($47M at cost).

Contract price includes $19.0M award fee and $73.9M for integration Hardware for the TSSAM operational tests.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 43.5% (10 yrs/23 yrs)

(2) Percent Program Cost Appropriated: 20.0% ($512.6 / $2562.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY84-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	512.6	117.0	98.5	339.0	1067.1
Procurement	-	-	12.2	1482.9	1495.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	512.6	117.0	110.7	1821.9	2562.2

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1984				5.2	4.2	4.2	4.2	3.8
1985				18.3	15.2	15.2	15.2	3.4
1986				37.7	32.2	32.2	32.2	2.8
1987				34.2	30.0	30.0	30.0	2.7
1988				46.1	41.9	41.9	41.9	3.0
1989				46.5	44.0	44.0	44.0	4.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1990				40.8	40.1	40.1	40.1	4.0
1991				70.3	71.9	71.9	70.6	4.3
1992				112.8	118.3	118.0	109.2	2.8
1993				106.9	114.8	47.1	9.2	2.4
1994				106.6	117.0			2.4
1995				87.7	98.5			2.3
1996				48.1	55.2			2.3
1997				30.0	35.2			2.2
1998				43.2	51.8			2.2
1999				47.6	58.3			2.2
2000				62.4	78.1			2.2
2001				47.2	60.4			2.2
Subtot				991.6	1067.1	444.6	396.6	
Appropriation: 2032 Missile Procurement, Army								
1995		3.9		10.6	12.2			2.3
1996	125	2.7	44.6	49.8	58.4			2.3
1997	336	28.4	69.9	95.0	114.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
1998	1081		100.1	97.2	119.1			2.2
1999	930	8.7	72.8	82.4	103.2			2.2
2000	1568		105.2	106.0	135.7			2.2
2001	1805		104.7	104.9	137.3			2.2
2002	2486		125.0	125.3	167.5			2.2
2003	3331		152.2	152.6	208.5			2.2
2004	3341		148.3	148.6	207.5			2.2
2005	3151		161.5	138.5	197.7			2.2
2006				23.3	34.0			2.2
Subtot	18154	43.7	1084.3	1134.2	1495.1			
Grand Total	18154	43.7	1084.3	2125.8	2562.2	444.6	396.6	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is pre-milestone III and production rate data is not required.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		12.2		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		1482.9		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

There was no Design-to-Cost objective established at the Milestone II review. The BAT Acquisition Decision Memorandum, dated 15 May 91, established a Design to Unit Production Cost (DTUPC) of less than or equal to $55K (FY 91 $, based upon production quantity of 30993) as exit criteria for Low Rate Initial Production.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The BAT Submunition will be furnished to the delivery vehicle contractor as GFE. The submunition is considered a certified round; therefore, O&S cost will be minimal. It will consist of stockpile reliability test for recertification, minimal depot maintenance, military personnel for Explosive Ordnance Disposal (EOD) and system project management. O&S requirements for BAT will solidify after the results of Level of Repair Analysis (LORA) associated Economic Analysis as well as planned accelerated aging tests and flight tests in FY95. There is no antecedent system.

BAT, December 31, 1992

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per BAT	Avg Annual Cost Per Antecedent
DEP MAINTENANCE (24 YRS)	0.2	N/A
MILPERS (10 YRS)	0.2	N/A
SYS PROJ MGT (20 YRS)	0.4	N/A
STKPILE REL TST (20 YRS)	1.0	N/A
Total	1.8	N/A

c. (U) Contractor Support Costs -- None.

AF-7 C-130H

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: C-130H

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
C-130H/HERCULES

2. DoD Component: USAF

3. Responsible Office and Telephone Number:
WR-ALC/LB
ROBINS AFB, GA 31098-1647
AV 468-2322 COMM 912-926-2322
COL STANLEY BISHOP
Assigned: July 30, 1992

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DIRECTORATE FOR FREEDOM OF INFORMATION
& SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 3010 ICN C130HD (Air Force)

5. Related Programs:
AFRES C-130H, ANG C-130H, USNR C-130T, USMC KC-130T, ANG LC-130H, ANG HC-130H(N) have been Congressionally directed "add-on's" since 1978.

6. Mission and Description:
The C-130 Hercules is a medium-range tactical airlift aircraft designed primarily for transport of cargo and personnel within a theater of operations. Variants of the C-130 perform many other missions, including close-air support, rescue and recovery, special operations and weather reconnaissance. More than 900 C-130's have been delivered to the US Air Force in the past 30 years, making it the "workhorse of the Air Force".

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SAF/PAS

OASD(PA) DFOISR 93-C-537

93-334 -T

6. Mission and Description (Cont'd):

The C-130 can carry more than 40,000 pounds of cargo (up to six pallets or wheeled vehicles). The cargo area can be quickly adapted to accommodate any combination of passenger, cargo or aeromedical airlift mission.

The C-130 can deliver personnel, equipment or supplies either by landing or by various aerial delivery modes. The three primary methods of aerial delivery used for equipment delivery are parachutes pulling the load from the aircraft; the Container Delivery system which uses the force of gravity to pull the supplies from the aircraft; and the Low Altitude Parachute Extraction System (LAPES).

Each of four turboprop engines drive a four-blade, constant-speed, reversible-pitch propeller with full feathering capability. The Hercules can operate on as little as 3,000 ft of dirt runway.

7. Program Highlights:

a. Significant Historical Developments --
In the summer 1990 through December 1990 the Air Force evaluated other systems to replace the aging C-130E and "H" models. A two-man cockpit, glass panel displays, more advanced engines and propellers were among the enhancements evaluated. Concerns over schedule, development and production cost resulted in an Air Force decision to modernize the C-130 fleet with the acquisition of 165 C-130H's --the lowest risk, lowest cost alternative. The C-130(H) was used extensively during the conflict in South East Asia and Desert Shield/Desert Storm because of its ability to operate on a dirt runway.

b. Significant Developments Since Last Report --
Procurement of the C-130 aircraft under the Five Year Option Contract has proceeded on schedule. FY92 non-stocklisted spares procurement was executed on 24 December 1992 to ensure a supportable aircraft is delivered to Air Mobility Command. Acquisition of GFE items continues on schedule.

The C-130(H) program meets mission requirements.

c. Changes Since As Of Date --
Funding for the Air Mobility Command (AMC) C-130H Acquisition program was significantly reduced from FY94 and out. New aircraft procurement ends with the FY93 acquisition. Support funding in FY94 and FY95 will support previous AMC aircraft, as well as new training systems being acquired by the program office. Funding for fleet spares remains through FY99.

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline (dated 8 Mar 93) or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Program Initiation	NOV 91	NOV 91	NOV 91(Ch-1)
Operational Requirements Document (ORD) Approval	JUN 92	N/A	JUN 92
FY92 Basic Aircraft Contract Mod	JUN 92	JUN 92	JUN 92
FY92 Peculiar/Data Contract Mod	DEC 92	DEC 92	JUN 93(Ch-2)
First Delivery	OCT 93	OCT 93	SEP 93(Ch-3)
Organic Depot Activation	JUL 95	JUL 95	JUL 95

Note: Initial Operational Capability for the C-130H is not applicable since the aircraft is already operational and this program is an off the shelf acquisition.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

Ch-1 - The Program Initiation Milestone was added per the APB approved on 14 Oct 92.

Ch-2 - The FY92 Peculiar/Data Contract Mod originally scheduled for Dec 92 has been delayed due to a delay in Five Year Option Contract (FYOC) negotiations which completed in Mar 93. Expected contract award is Jun 93.

Ch-3 - First Aircraft delivery has been accelerated one month due to contractor delivery schedule changes. First aircraft delivery is now scheduled for Sep 93.

d. References --

Production Estimate:
FY94 Amended President's Budget dated April 1993

Approved Program:
AFAE Approved Acquisition Program Baseline dated 08 March 1993.

10. Performance Characteristics:

a. Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Maximum payload(lbs)	40174	40174	/ 40174	40174	40174
Normal Maximum Take-off Gross Weight (lbs)	155000	155000	/ 155000	155000	155000
Design Landing Gross Weight (lbs)	130000	130000	/ 130000	130000	130000
Take-off distance at max take-off weight over 50 ft obstacle (ft)	5500	5500	/ 5500	5500	5500
Landing distance at design landing weight (ft)	2550	2550	/ 2550	2550	2550
Cruising speed at 100,000 lbs @ 25,000 ft (KTAS)	315	315	/ 315	315	315
Max range with 42,914 lbs of fuel and 30,590 lbs payload (nm)	2350	2350	/ 2350	2350	2350
Fully Mission Capable rate (FMC) (%)	72.2	72.2	/ 72.2	72.2	72.2
Mission Capable Rate (MC) (%)	84.3	84.3	/ 84.3	84.3	84.3
Mean-Time Between Removal (MTBR) (hrs)	9.83	9.83	/ 9.83	9.83	9.83
Maintenance Man-Hours per Flying Hour (MMH/FH) (hrs)	12.1	12.1	/ 12.1	12.1	12.1
Mean Man-Hours To Repair (MMHTR) (hrs)	5.96	5.96	/ 5.96	5.96	5.96

KTAS - Knots True Air Speed

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
FY94 Amended President's Budget dated April 1993.

10d. Performance Characteristics (Cont'd):

Approved Program:
AFAE Approved Acquisition Program Baseline dated 08 March 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	9.6	27.4	0.0
Procurement	6677.9	5319.8	604.2
Airframe	(4867.6)		(349.1)
Engine	(476.9)		(46.3)
Other GFE	(120.6)		(9.5)
ECO	(37.2)		(2.2)
Total Flyaway	(5502.3)		(407.1)
PEC Training Equipment	(266.8)		(53.2)
Data	(123.9)		(20.5)
Mission Support			(4.1)
ICSE			(7.7)
ICS			(26.4)
Total Other Wpn Sys	(390.7)		(111.9)
Peculiar Support	(438.9)		(19.0)
Initial Spares	(346.0)		(66.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	6687.5	5347.2	604.2
Escalation	4614.1	3636.3	125.7
Development (RDT&E)	(2.5)	(12.4)	(0.0)
Procurement	(4611.6)	(3623.9)	(125.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	11301.6	8983.5	729.9

Acronyms:

ICS - Interim Contractor Support
ICSE - Initial Common Support Equipment

b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	165	165	16
Total	165	165	16

c. Foreign Military Sales/International Cooperative Programs --
None.

11d. Total Program Cost and Quantity (Cont'd):

d. Nuclear Costs -- None.

e. References --

Production Estimate:
FY94 Amended President's Budget dated April 1993.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 08 March 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(MAR 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	729.9	11301.6	729.9
(2) Quantity	16	165	16
(3) Unit Cost	45.619	68.495	45.619
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	308.4	313.6	54.9
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	308.4	313.6	54.9
(2) Quantity	8	8	0
(3) Unit Cost	38.550	39.200	N/A

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	12.1	11289.5	0.0	11301.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-51.7	-	-51.7
Quantity	-	-8756.2	-	-8756.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-12.1	+10.9	-	-1.2
Other	-	-	-	-
Support	-	-1762.6	-	-1762.6
Subtotal	-12.1	-10559.6	-	-10571.7
Total Changes	-12.1	-10559.6	-	-10571.7
Current Estimate	-	729.9	-	729.9

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	9.6	6677.9	0.0	6687.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-5105.6	-	-5105.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.6	+9.1	-	-0.5
Other	-	-	-	-
Support	-	-977.2	-	-977.2
Subtotal	-9.6	-6073.7	-	-6083.3
Total Changes	-9.6	-6073.7	-	-6083.3
Current Estimate	-	604.2	-	604.2

b. Previous Change Explanations -- None.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
C-130 RDT&E Funding deleted in the FY94 Amended Presidents Budget (Estimating)	-9.6	-12.1
RDT&E Subtotal	-9.6	-12.1

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-1345.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1293.7
Quantity Change resulting from decrease of 149 units. (Quantity)	-5105.6	-8756.2
Adjustment for Current & Prior Inflation. (Estimating)	+9.1	+10.9
Adjustment for Current & Prior Inflation. (Support)	+1.6	+2.3
Initial Spares funding deleted beginning in FY00 (Support)	-279.9	-533.6
Peculiar Support equipment funding deleted beginning in FY96 (Support)	-419.9	-723.1
Other weapon systems funding significantly reduced due to program cancellation (Support)	-279.0	-508.2
Procurement Subtotal	-6073.7	-10559.6

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
68.5	-3.2	90.6	--	--	0.7	-0.8	-110.2	-22.9	45.6

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

C130H FYOC:	Initial Contract Price Target	Ceiling	Qty
LOCKHEED AERONAUTICAL SYS, MARIETTA, GA F33657-90-C-0071, FFP Award: December 10, 1991 Definitized: September 1, 1992	$76.8	N/A	4

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$76.8	N/A	4	$76.8	$76.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Note: FY1992-93 C-130H aircraft will be procured using the existing Firm Fixed Price (FFP) contract for C-130 aircraft (F33657-90-C-0071) with Lockheed Aeronautical Systems.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 25.0% (2 yrs/8 yrs)

(2) Percent Program Cost Appropriated: 77.5% ($565.9 / $729.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	-	-	-	-	-
Procurement	565.9	54.9	53.1	56.0	729.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	565.9	54.9	53.1	56.0	729.9

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force								
1992	8		195.7	219.0	257.5	186.3	32.8	2.8
1993	8		211.4	256.4	308.4	163.5		2.4
1994				44.6	54.9			2.4
1995				42.2	53.1			2.3
1996				8.9	11.5			2.3
1997				10.1	13.3			2.2
1998				12.1	16.2			2.2
1999				10.9	15.0			2.2
Subtot	16		407.1	604.2	729.9	349.8	32.8	
Grand Total	16		407.1	604.2	729.9	349.8	32.8	

Obligations and Expenditures reflect program office records as of 1 April 1993.

17. Production Rate Data:

a. Production Baseline Rate - None.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		54.9		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		53.1		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		56.0		N/A	N/A

Per the April 1993 Amended President's budget, the last Aircraft Fiscal Year buy was FY93. Therefore, section 17b does not apply to the C-130 Program.

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The cost shown for Table 18(b) is for an active duty AMC squadron of 16 primary authorized aircraft (PAA) flown at 637 flying hours (FH) per PAA, per year.

Unit Mission Personnel includes all officers, enlisted, and civilian personnel for the squadron. It also includes base operating support (BOS), medical, and communications support personnel.

Unit Level Consumption is fuel consumption (807 gallons per FH), aircraft maintenance material, and training ordinance.

Depot maintenance is the cost to maintain the airframe, engines, reparable components, support equipment, and software for the system. It also includes personnel and contractual support for system

18a. Operating and Support Costs (Cont'd):
modifications.

Sustaining investment includes depot level reparables, the replacement of ground support equipment, and modification kits.

Indirect Personnel Support includes non-pay BOS, non-pay medical support, and permanent change of station cost for military personnel.

Acquisition and Training is the recurring cost to acquire and train new officers and enlisted personnel to support the unit.

The Operating and Support estimate was completed by ASC/ALTE for ASC/SDCJ in February, 1992.

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per C-130H Squadron	Avg Annual Cost Per Antecedent (N/A)
Unit Mission Personnel	28.9	N/A
Unit Level Consumption	8.1	N/A
Depot Maintenance	4.1	N/A
Sustaining Investment	5.2	N/A
Indirect Personnel Spt	6.0	N/A
Acquisition & Training	6.3	N/A
Total	58.6	N/A

c. Contractor Support Costs -- None.

C-130H contractor support costs are not identified separately from the C-130 fleet.

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N-17 F/A-18 E/F

92 133 526

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OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: F/A-18 E/F

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
F/A-18 E/F Naval Strike Fighter (HORNET)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
F/A-18 Program Office
Tactical Aircraft Program
Washington, DC 20361-1265

CAPT CRAIG STEIDLE
Assigned: June 11, 1990
AV 222-7954 COMM (703) 692-7954

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0204136N
PROCUREMENT:
APPN 1506 ICN 014500 (Navy)

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MAY 27 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs:
F/A-18 C/D

6. Mission and Description:

The F/A-18 E/F will be the second major model upgrade since F/A-18 aircraft program inception. The F/A-18 E (single seat) and the F/A-18 F (two seat) will be a high performance twin engine, mid-wing, multi-mission tactical aircraft designed to replace F/A-18 C (single seat), F/A-18 D (two seat), A-6, and F-14 aircraft as they reach the

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MAY 26 1993
Office of the Chief of
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Dept. of the Navy

OASD(PA) DFOISR 93-C-715

6. Mission and Description (Cont'd):

end of service life and retire. The F/A-18 E/F will be designed primarily to meet current Navy and Marine Corps fighter escort, interdiction, fleet air defense and close air support mission requirements. Enhancements will include the increased range and improved carrier suitability required for the F/A-18 to continue it's key strike fighter role against the advanced threat of the late 1990's and beyond.

7. Program Highlights:

a. Significant Historical Developments --

In July 1987, the Secretary Of Defense issued a memorandum to the Secretaries of the Navy and the Air Force directing them to begin studying advanced versions of the F/A-18 and F-16 aircraft. In response, the Assistant Chief of Naval Operations for Air Warfare initiated an upgrade study to evaluate various F/A-18 alternatives for the year 2000 and beyond. The trade studies for the Hornet 2000 evaluated seven configuration options for operational performance, costs and technical feasibility. The results of these studies, refined by risk reduction work during FY-91, have been incorporated into the recommended configuration for the F/A-18 E/F.

The F/A-18 E/F program was reviewed by the Defense Acquisition Board (DAB) for Milestone IV/II approval in May 1992. The DAB approved the program to enter Engineering and Manufacturing Development (E&MD) in the Acquisition Decision Memorandum (ADM) on 12 May 1992.

The Engineering and Manufacturing Development (E&MD) contract was awarded July 1992.

The Test and Evaluation Master Plan for the F/A-18 E/F was approved 5 May 1992.

b. Significant Developments Since Last Report --

The F/A-18 E/F Engineering, Manufacturing and Development program has successfully completed an Engine Preliminary Design Review in October 1992 and an Airframe Initial Design Review in September of 1992. An Integrated Management Information Control System (IMICS) has been implemented which allows the program office to monitor the contractors schedule and cost process, and risk management. Also implemented was the cost/schedule control system which also monitors the contractors cost and schedule progress and shows any changes or variances.

Due to a $190M FY93 Congressional Funding reduction, the first flight date has been adjusted from October 1995 to December 1995.

The Engineering and Manufacturing Development (E&MD) engine and

7b. Program Highlights (Cont'd):

airframe contracts were definitized on 07 December 1992

The F404 engine incorporates the F412 core, which was partially developed under the A-12 Program. The testing under the A-12 program reduces risk considerably for F414 core development. Component rig testing of the afterburner permitted early identification of design changes that resulted in better than predicted performance levels. Low pressure turbine and combustor rig tests in the last quarter of the year also produced better than expected performance. This had been considered a difficult challenge area. Engine altitude testing began in November 1992.

This system will satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There are no breaches to the Acquisition Program Baseline dated June 11, 1992, and no Nunn McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone IV/II	MAR 92	MAR 92	MAY 92
First Engine to Test	APR 93	APR 93	MAY 93(Ch-1)
Preliminary Design Review (Airframe)	APR 93	APR 93	JUN 93(Ch-1)
Critical Design Review (Airframe)	JAN 94	JAN 94	MAY 94(Ch-1)
Production Readiness Review (Airframe)	APR 95	APR 95	SEP 95(Ch-1)
Preliminary Flight Qualification (Engine)	MAR 95	MAR 95	MAR 95
First Flight	OCT 95	OCT 95	DEC 95(Ch-1)
Long Lead Release for LRIP	DEC 95	DEC 95	MAR 96(Ch-1)
Limited Production Qualification (Engine)	OCT 96	OCT 96	OCT 96
LRIP Contract Award	JAN 97	JAN 97	MAR 97(Ch-1)
Full Production Qualification (Engine)	OCT 97	OCT 97	OCT 97
LRIP First Delivery	DEC 98	DEC 98	JAN 99(Ch-1)
Milestone III	JAN 00	JAN 00	MAR 00(Ch-1)
Full Rate Production Contract Award	JAN 00	JAN 00	MAR 00(Ch-1)
DT&E			
DT-IIA	OCT 95	OCT 95	NOV 95(Ch-1)
DT-IIB	NOV 96	NOV 96	NOV 96

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
DT-IIC	NOV 97	NOV 97	NOV 97
DT-IID	JUL 98	JUL 98	SEP 98(Ch-1)
DT-IIE	OCT 98	OCT 98	OCT 98
IOT&E			
OT-IIA	MAR 97	MAR 97	MAY 97(Ch-1)
OT-IIB	DEC 97	DEC 97	FEB 98(Ch-1)
OT-IIC	MAR 99	MAR 99	MAY 99(Ch-1)
FOT&E			
DT-III	FEB 00	FEB 00	FEB 00
OT-III	FEB 00	FEB 00	FEB 00
O-Level Maintenance Capability (OPEVAL)	MAR 99	MAR 99	MAR 99
IOC	SEP 00	SEP 00	SEP 00
I-Level Maintenance Capability			
WRA TPS and Modified TPSs (IOC)	SEP 00	SEP 00	SEP 00
New SRA TPS (IOC + one year)	SEP 01	SEP 01	SEP 01
Material Support Date	OCT 02	OCT 02	OCT 02
Navy Support Date	OCT 03	OCT 03	OCT 03
D-Level Maintenance Capability	OCT 03	OCT 03	OCT 03

b. Previous Change Explanations --

The program schedule was updated to reflect the Amended FY 1993 President's Budget, dated January 1992. Milestone II/IV review rescheduled from March 92 to May 92 to meet DAB schedule. Preliminary Flight Qualification (Engine), Milestone III and Full Rate Production Contract Award updated to reflect program schedule as approved by DAB.

c. Current Change Explanations --

(Ch-1): Current milestone estimates have been updated to reflect the Congressional funding reduction of $190M in FY93.

d. References --

Development Estimate:
DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:
DAE Approved Acquisition Program Baseline dated 11 June 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Deck Spot Factor (F/A-18A/B/C/D =1.2)	1.4	1.4 / <1.5		<1.5	
Fighter Escort Radius (internal fuel) (Nm)	425	425 / 410		425	(CH-1)
Interdiction Mission Radius (Nm)					
2 external tanks (retained)	400	400 / 390		400	(CH-1)
3 external tanks (retained)	450	450 / 430		450	(CH-1)
Combat Ceiling (max thrust)(ft)	>50000	>50000 / 50000		>50000	
Carrier Suitability (Tropical Day Conditions)					
Launch: Catapult WOD (C-13 Catapult:TCGW) (kts)	25	25 / <30		<30	
Recovery: WOD (MK-7 MOD 3) (kts)	10	10 / <15		<15	
Approach Speed (kts)	140	140 / <150		<150	
Recovery Payload (lbs)	9000	9000 / 9000		9,000	
Usable Load Factor (Subsonic; Nz) (G's)	+7.5	+7.5 / +7.5		+7.5	
Specific Excess Power (Max Thrust, .9M, 1G, 10kft) (fps)	650	650 / >600		>600	
Acceleration (.8M to 1.2M at 35kft) (sec)	60	60 / <70		<70	
Mean Flight Hours Between Maintenance Actions	0.6	0.6 / 0.5		0.5	
Mean Flight Hours Between Failures 1/	2.0	2.0 / 1.7		1.7	
Maintenance Hours per flight hour (O&I-Level Unsched)	12.0	12.0 / 15.0		15.0	
Built-In Test (All Avionics) 1/					
Fault Detection (%)	75	75 / 65		65	
Fault Isolation (%)	90	90 / 85		85	
False Alarm Rate (%)	30	30 / 45		45	

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Speed (Mach) Fighter Escort Mission Configuration @10,000 ft with Intermediate Rated Thrust	.98	.98 / .96		.96	
Empty Weight (lbs)	29950	29950 / 31950		30564	(CH-1)

Note: Interdiction Mission Radius (NM) payload with:
2 external tanks: 2 AIM-9 + 5 MARK 83 LD + FLIR/TIN
3 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN and Low Drag Pylons

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1): Current estimate revised based on most recent program review.

d. References --

Development Estimate:
Operational Requirements Document dated December 19, 1991.
DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:
DAE Approved Acquisition Program Baseline dated 11 June 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	4883.3	4883.3	4927.4 *
Procurement	49076.3	49076.3	48771.5
Recurring Flyaway	(36450.2)		(36345.4)
Non-Recurring	(368.1)		(366.7)
Total Flyaway	(36818.3)		(36712.1)
Ancillary	(3858.5)		(3848.3)
Peculiar Support	(4301.9)		(4388.7)
Initial Spares	(4097.6)		(3822.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	53959.6	53959.6	53698.9
Escalation	40623.4	40623.4	26885.3
Development (RDT&E)	(949.3)	(949.3)	(807.5)
Procurement	(39674.1)	(39674.1)	(26077.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	94583.0	94583.0	80584.2

*PRE-DEVELOPMENT FUNDING OF $44.1 IN FY90 BASE YEAR $'S IS REFLECTED IN THE DEVELOPMENT (RDT&E) CURRENT ESTIMATE. THE $44.1M (BY$) WAS NOT A PART OF THE E&MD ESTIMATE AND IS NOT TO BE INCLUDED IN THE APPROVED $4.883B DEVELOPMENT CAP.

ATARS Sensor Suites procurement quantities are FY97 - 2, FY98 - 9, FY99 - 10, FY00 - 10, FY01 - 8, FY02 - 7. The costs associated for these systems are currently under review.

b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	1000	1000	1000
Total	1000	1000	1000

Note: Excludes 7 RDT&E prototype from the Current Estimate that is not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- N/A

11e. Total Program Cost and Quantity (Cont'd):

e. References --

Development Estimate:
DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:
DAE Approved Acquisition Program Baseline dated 11 June 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(JUN 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	80584.2	94583.0	80584.2
(2) Quantity	1000	1000	1000
(3) Unit Cost	80.584	94.583	80.584
b. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	5832.6	88750.4	0.0	94583.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-177.3	-13194.5	-	-13371.8
Quantity	-	-	-	-
Schedule	+31.7	-328.9	-	-297.2
Engineering	-	-	-	-
Estimating	+47.9	-93.6	-	-45.7
Other	-	-	-	-
Support	-	-284.1	-	-284.1
Subtotal	-97.7	-13901.1	-	-13998.8
Total Changes	-97.7	-13901.1	-	-13998.8
Current Estimate	5734.9	74849.3	-	80584.2

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4883.3	49076.3	0.0	53959.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+41.0	-	+41.0
Engineering	-	-	-	-
Estimating	+44.1	-147.2	-	-103.1
Other	-	-	-	-
Support	-	-198.6	-	-198.6
Subtotal	+44.1	-304.8	-	-260.7
Total Changes	+44.1	-304.8	-	-260.7
Current Estimate	4927.4 *	48771.5	-	53698.9

b. Previous Change Explanations --

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
*Revised escalation indices. (Economic)	N/A	-177.3
PRE-DEVELOPMENT EFFORT PREVIOUSLY FUNDED UNDER THE F/A-18 C/D PROGRAM. (Estimating)	+44.1	+47.9

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Revised flight test and aircraft delivery schedule. (Schedule)	N/A	+31.7
RDT&E Subtotal	+44.1	-97.7
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-13194.5
Aircraft procurement accelerated, quantities procured in FY98-99. (Schedule)	+41.0	-328.9
Refinement of a prior current estimate. (Estimating)	-147.2	-93.6
Decrease in spares funding. (Support)	-198.6	-284.1
Procurement Subtotal	-304.8	-13901.1

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
94.58	-13.37	--	-0.30	--	-0.05	--	-0.28	-14.00	80.58

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

Airframe E&MD:

MCDONNELL DOUGLAS, St. Louis, MO
N00019-92-C-0059, CPAF/IF
Award: July 20, 1992
Definitized: December 7, 1992

Initial Contract Price		
Target	Ceiling	Qty
$3879.5	$0.0	0

Current Contract Price		
Target	Ceiling	Qty
$3879.5	$0.0	0

Estimated Price At Completion	
Contractor	Program Manager
$3879.5	$4456.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (01/31/93)	$7.5	$-2.7
Net Change	$7.5	$-2.7

15. Contract Information (Cont'd):

Explanation of Change:

The January 1993 CPR is the first contractor report to contain the Contract Budget Baseline (CBB) to the detail level. This will be the basis for tracking MDA's budget changes. The January 1993 CPR analysis conducted by the NAVAIR (AIR-52433) cost analyst shows a favorable cost variance and an unfavorable schedule variance. Over 50% of the favorable cost variance is due to lower than planned direct labor rates and burden rates at NAD. The unfavorable schedule status is due to Special LEX team requirements and testing which has delayed several tests and activities, delay of fabrication test articles because of late definition release, schedule slip of NAD Supersonic Wind Tunnel (Model 404) because of AEDC test facility availability, and a delay in design development tests at NAD.

YF414-GE-404 Engine:	Initial Contract Price Target	Ceiling	Qty
General Electric Company, Lynn, MA N00019-92-C-0149, CPAF/IF Award: July 20, 1992 Definitized: December 7, 1992	$773.8	$0.0	21

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$773.8	$0.0	21	$773.8	$841.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (01/31/93)	$2.7	$-6.3
Net Change	$2.7	$-6.3

Explanation of Change:

The January 1993 CPR analysis conducted by the NAVAIR (AIR-52433) cost analyst shows a favorable cost variance and an unfavorable schedule variance. The favorable cost variance is primarily due to billing delays which resulted in late recording of actual costs for a significant amount of tooling and hardware. GE's use of estimated actuals began in April and will properly record the actual cost with the recognition of the receipt of tooling and hardware. The unfavorable schedule variance can be attributed to a delay in delivery of Stage 2 & 3 Blisks and miscellaneous raw material, hardware, and tooling from suppliers.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 12.0% (3 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 1.5% ($1201.2 / $80584.2)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2015)	Total
RDT&E	1201.2	1414.0	1345.6	1774.1	5734.9
Procurement	-	-	-	74849.3	74849.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1201.2	1414.0	1345.6	76623.4	80584.2

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1991				7.5	8.0	8.0	8.0	4.3
1992				321.7	350.1	349.3	319.4	2.8
1993				756.7	843.1	492.9	22.0	2.4
1994				1240.0	1414.0			2.4
1995				1153.6	1345.6			2.3
1996				709.4	846.2			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1997				354.1	431.7			2.2
1998				110.0	137.0			2.2
1999				42.7	54.4			2.2
2000				117.7	153.2			2.2
2001				114.0	151.6			2.2
Subtot				* 4927.4	5734.9	850.2	349.4	

* PRE-DEVELOPMENT EFFORT OF $8.0M IN FY91 AND $39.9M IN FY92, PREVIOUSLY FUNDED UNDER THE F/A-18 C/D PROGRAM, IS REFLECTED IN THE RDT&E TOTAL. THIS $47.9M IS NOT TO BE INCLUDED IN THE $4.883B CONGRESSIONALLY MANDATED FUNDING CAP.

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy								
1996				277.1	346.5			2.3
1997	12	68.9	1319.2	1708.5	2142.9			2.2
1998	24	98.5	1825.3	2342.7	2999.0			2.2
1999	24	66.6	1501.5	2212.5	2894.7			2.2
2000	30	51.9	1601.9	2481.6	3319.0			2.2
2001	48		2167.5	3045.4	4160.4			2.2
2002	48		1998.0	2816.6	3932.6			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)								
2003	48		1881.8	2674.2	3816.1			2.2
2004	48		1799.3	2544.2	3710.5			2.2
2005	48		1737.5	2450.6	3652.7			2.2
2006	48	80.8	1687.5	2499.4	3809.8			2.2
2007	72		2375.2	3045.7	4742.5			2.2
2008	72		2302.2	2927.5	4658.9			2.2
2009	72		2241.9	2835.6	4611.9			2.2
2010	72		2190.0	2785.9	4630.8			2.2
2011	72		2146.7	2725.4	4629.9			2.2
2012	72		2108.7	2670.5	4636.5			2.2
2013	72		2074.9	2619.6	4648.2			2.2
2014	72		2044.6	2494.9	4521.6			2.2
2015	46		1341.7	1613.6	2984.8			2.2
Subtot	1000	366.7	36345.4	48771.5	74849.3			
Grand Total	1000	366.7	36345.4	53698.9	80584.2	850.2	349.4	

17. Production Rate Data:

a. Production Baseline Rate

This program is pre-Milestone III and no full-rate production baseline has been determined.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		74849.3		N/A	N/A

Not required for a Pre-Milestone III program.

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Current Program: F/A-18E
Flight hours per aircraft per month: 30
Number of aircraft per squadron: 10
Consumption rate, gallons per hour: 1110.0 POL cost, JP-5 per barrel, FY90: 25.2
Date of estimate: June 1992

Antecedent Program: F/A-18C
Flight hours per aircraft per month: 30
Number of aircraft per squadron: 12
Consumption rate, gallons per hour: 1073.9 POL cost, JP-5, per

18a. Operating and Support Costs (Cont'd):
barrel, FY90: 25.2

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F/A-18E Squadron 10 A/C Squadron	Avg Annual Cost Per F/A-18C Squadron 12 A/C Squadron
Personnel	7.5	8.3
Consumables	5.3	6.3
Depot Maintenance	4.7	5.0
Sustaining Invesment	0.7	0.9
Indirect Cost	0.4	0.4
Other Costs	4.1	4.5
Total	22.7	25.4

c. Contractor Support Costs -- None.

N-30 NESP

92-137

[redacted]

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(OSA)823)
PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 1992

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AS AMENDED
CLEARED
FOR OPEN PUBLICATION

MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

9

1. (U) Designation and Nomenclature (Preferred Name):
Navy EHF Satellite Communications Program (NESP)
AN/USC-38(V)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
Space and Naval Warfare Systems Command - PMW 156
2451 Crystal Drive
Arlington, VA 22245-5200
CAPT K.D. Slaght
Assigned: March 11, 1993
AV 332-3950 COMM (703) 602-3950

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0303109N Project X0728

No Security Objection to Open Publication (AS AMENDED)
93-C-0436
MAY 26 1993
Office of the Chief of Naval Operations
Dept. of the Navy

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93-705

[redacted]

[redacted]

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 1810 ICN 33321000 (Navy) (Shared)
APPN 1810 ICN 33322000 (Navy) (Shared)
APPN 1810 ICN 33902000 (Navy) (Shared)
APPN 1611 ICN MULTIPLE (Navy) (Shared)
MILCON:
PE 0303109N

5. (U) Related Programs:
Milstar Satellite Communications System

6. (U) Mission and Description:
a. (U) The Navy Extremely High Frequency (EHF) Satellite Communications Program (NESP) AN/USC-38(V) is a general purpose communications terminal designed to accommodate a wide variety of communication applications (i.e., secure voice, teletype, data, and fleet broadcast systems). The terminal operates within the Extremely High Frequency uplink and Super High Frequency (SHF) downlink radio frequency (RF) spectrums. It operates with the Fleet Satellite (FLTSAT) EHF Package (FEP) installed on FLTSAT 7 and 8, and will operate with the Milstar system and EHF packages installed on UFOs four through nine. The NESP terminal will provide survivable wartime command and control communications for designated commanders and their assigned forces. NESP has three configurations: Submarine (V)1, Ship (V)2, and Shore (V)3. This system does not replace another system.

7. (U) Program Highlights:
a. (U) Significant Historical Developments —
(U) The terminal was developed to support the requirements of the Mission Elements Needs Statement (MENS), ASN (RE&S) letter of 23 July 1981, and Navy Decision Coordinating Paper (NDCP) of 21 January 1982, updated 25 April 1989. NESP's operational performance will meet the threat defined in the Milstar System Threat Assessment Report (STAR) updated March 1992. After a full and open competition, three companies began system definition and concept demonstration in 1979. Two companies were selected for FSD in 1982; one company was awarded a Firm Fixed Price contract in 1986 for Full Scale Development (FSD) completion and initial production. Low Rate Initial Production (LRIP) beginning in FY-90 was approved at a Milestone IIIA decision in May 1989. Operational Evaluation (OPEVAL) was completed in September 1990. Full Rate Production beginning in FY-93 was approved at a Milestone III decision in April 1993.

(U) The system is expected to satisfy all current mission requirements.

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report — None - Initial Report.

c. (U) Changes Since As Of Date — None

8. (U) Threshold Breaches:
There have been no breaches to the Acquisition Program Baseline dated 24 March 1993.
There have been no Nunn-McCurdy Unit Cost breaches to the Aquisition Program Baseline dated 24 March 1993.

9. (U) Schedule:

a. (U) Milestones —

	Production Estimate	Approved Program	Current Estimate
System Definition/Concept Demo (CEB) (3 Contractors)	OCT 79	OCT 79	OCT 79
FSD Approval (Milestone II) (2 Contractors)	JAN 82	JAN 82	JAN 82
PDR Complete	NOV 82	NOV 82	NOV 82
CDR Complete	JUN 84	JUN 84	JUN 84
Downselect (1 Contractor)	MAR 86	MAR 86	MAR 86
Factory Acceptance Test	JAN 88	JAN 88	JAN 88
Operational Assessment (OTIIA)	MAR 88	MAR 88	MAR 88
Program Review (Low Rate Initial Prod)	MAY 89	MAY 89	MAY 89
Operational Evaluation (OTIIB)	JUN 90	JUN 90	JUN 90
Low Rate Initial Production First Delivery	JUL 92	AUG 92	AUG 92
Additional Operational Testing (OTIIC)	JUL 92	JUL 92	JUL 92
Milestone III (Full Rate Production)	DEC 92	DEC 92	APR 93 (Ch-1)
First Unit Equipped Start	JAN 93	JAN 93	JAN 93
Initial Operational Capability (Navy)	JAN 94	JAN 94	JAN 94
FOT&E	MAR 94	MAR 94	MAR 94
Recompete RFP Release	JAN 95	JAN 95	N/A (Ch-2)
Service Depot Support Date	FEB 94	FEB 94	FEB 94
Follow-On Procurement RFP Release	JAN 97	JAN 97	JAN 97
MDR Applique Award	OCT 97	OCT 97	OCT 97
MDR Operational Test	OCT 98	OCT 98	OCT 98
Milestone IV	FEB 99	FEB 99	FEB 99
Organic Support Capability Date	FEB 94	FEB 94	FEB 94

b. (U) Previous Change Explanations — None.

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

(Ch-1) Due to redefinition of terminal quantities resulting from force restructure (CNO memo of 13 Jan 93) Milestone III was delayed from December 1993 from the April 1993.
(Ch-2) "Recompete RFP Release" has been replaced with "Follow-on Procurement RFP Release".

d. (U) References --

(U) Production Estimate:
NAE Approved Acquisition Program Baseline dated 24 March 1993.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 24 March 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)	[redacted]			

10a. (U) Performance Characteristics (Cont'd):
rmi - nautical miles
sec - seconds
rads(si)/sec - radiation dose (square inches)/second
sv - secure voice
TTY - Teletype
hrs - hours

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
NAE Approved Acquisition Program Baseline dated 24 March 1993.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 24 March 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	457.4	457.4	461.5
Procurement	1395.2	1395.2	1414.3
Terminals	(991.7)		(1005.5)
Other Weapon Sys	(127.9)		(130.7)
Peculiar Support	(40.7)		(40.7)
Initial Spares	(234.9)		(237.4)
Construction (MILCON)	24.0	24.0	24.5
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	1876.6	1876.6	1900.3
Escalation	497.1	497.1	365.1
Development (RDT&E)	(6.0)	(6.0)	(4.5)
Procurement	(486.3)	(486.3)	(356.3)
Construction (MILCON)	(4.8)	(4.8)	(4.3)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2373.7	2373.7	2265.4
b. (U) Quantity --			
Development (RDT&E)	7	7	7
Procurement	386	386	386
Total	393	393	393

Note: RDT&E units are fully configured

11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs — None.

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Production Estimate:
NAE Approved Acquisition Program Baseline dated 24 March 1993.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated 24 March 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2265.4	2265.4	2265.4
(2) Quantity	393	393	393
(3) Unit Cost	5.764	5.764	5.764
b. (U) Current Procurement —	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	174.4	174.4	168.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	174.4	174.4	168.0
(2) Quantity	58	58	63
(3) Unit Cost	3.007	3.007	2.667

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	463.4	1881.5	28.8	2373.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-4.5	-138.8	-0.8	-144.1
Quantity	-	-	-	-
Schedule	+7.1	+20.2	-	+27.3
Engineering	-	-	-	-
Estimating	-	-	+0.8	+0.8
Other	-	-	-	-
Support	-	+7.7	-	+7.7
Subtotal	+2.6	-110.9	-	-108.3
Total Changes	+2.6	-110.9	-	-108.3
Current Estimate	466.0	1770.6	28.8	2265.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	457.4	1395.2	24.0	1876.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	+4.1	+13.8	-	+17.9
Engineering	-	-	-	-
Estimating	-	-	+0.5	+0.5
Other	-	-	-	-
Support	-	+5.3	-	+5.3
Subtotal	+4.1	+19.1	+0.5	+23.7
Total Changes	+4.1	+19.1	+0.5	+23.7
Current Estimate	461.5	1414.3	24.5	1900.3

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised inflation rates for FY 94 President's budget. (Economic)		-4.5

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Due to budget reductions, development of some terminal software modifications were delayed until FY 2000. (Schedule)	+4.1	+7.1
RDT&E Subtotal	+4.1	+2.6
(2) Procurement		
Revised inflation rates for the FY 94 President's budget. (Economic)		-138.8
Procurement budget reductions deferred procurement of 10 AN/USC-38(V) terminals from FY 93/94 until after the current FYDP. (Schedule)	+13.8	+20.2
Support changes as the result of budget induced delay in procurement of 10 terminals to a future contract. (Support)	+5.3	+7.7
Procurement Subtotal	+19.1	-110.9
(3) MILCON		
Revised inflation rates for the FY 94 President's budget. (Economic)		-0.8
Revised estimate for the previously planned Military Construction projects. (Estimating)	+0.5	+0.8
MILCON Subtotal	+0.5	—

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.040	-0.367	—	0.069	—	0.002	—	0.020	-0.276	5.764

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement —

(U) EHF Terminals:	Initial Contract Price		
	Target	Ceiling	Qty
RAYTHEON COMPANY, MARLBOROUGH, MA N00039-82-C-0146, FFP Mod Award: February 14, 1990 Definitized: February 14, 1990	$83.7	N/A	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$286.2	N/A	174	$286.2	$286.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status —

(1) Percent Program Completed: 48.0% (12 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 38.0% ($859.9 / $2265.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	318.9	15.2	20.7	111.2	466.0
Procurement	532.4	168.0	63.9	1006.3	1770.6
MILCON	8.6	-	13.0	7.2	28.8
O&M	-	-	-	-	-
Total	859.9	183.2	97.6	1124.7	2265.4

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary —

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1982				22.3	17.2	17.2	17.2	7.6
1983				30.2	24.4	24.4	24.4	4.9
1984				29.7	24.8	24.8	24.8	3.8
1985				38.0	32.8	32.8	32.8	3.4
1986				23.9	21.2	21.2	21.2	2.8
1987				37.4	34.2	34.2	34.2	2.7
1988				42.8	40.4	40.4	40.4	3.0
1989				27.9	27.4	27.4	27.4	4.2
1990				19.8	20.3	20.3	19.2	4.0
1991				16.2	17.2	17.2	16.2	4.3
1992				30.4	33.1	33.0	22.5	2.8
1993				23.2	25.9	18.3	4.4	2.4
1994				13.3	15.2			2.4
1995				17.7	20.7			2.3
1996				11.7	14.0			2.3
1997				14.2	17.3			2.2
1998				19.9	24.8			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1999				25.8	32.9			2.2
2000				17.1	22.2			2.2
Subtot	7			461.5	466.0	311.2	284.7	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1990	3		3.9	3.9	4.3	4.3	1.7	4.0
1991	1		1.2	1.2	1.3	1.3	0.4	4.3
1992	1		2.0	2.0	2.3	1.3	0.1	2.8
1993	8		10.8	10.8	12.7			2.4
1994	5		9.3	9.3	11.2			2.4
1995			4.4	4.4	5.4			2.3
1996			6.0	6.0	7.6			2.3
1997			2.7	2.7	3.5			2.2
Subtot	18		40.3	40.3	48.3	6.9	2.2	

Recurring costs include installation which is currently budgeted in the year in which the effort occurs.

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy								
1989		4.3	4.5	8.8	9.1	9.1	8.5	4.2
1990	21	17.4	27.9	113.3	121.2	120.4	114.9	4.0
1991	37	2.8	43.7	73.4	79.9	77.0	51.7	2.8
1992	53	1.8	85.9	125.4	139.9	96.6	29.4	2.4
1993	50	1.0	80.2	141.6	161.7	7.1	0.3	2.4
1994	58	0.4	92.1	134.2	156.8			2.3
1995			48.6	49.0	58.5			2.3
1996			43.9	44.2	54.0			2.2
1997			19.7	20.0	24.9			2.2
1998			11.9	16.6	21.2			2.2
1999	3	2.8	13.1	23.8	31.0			2.2
2000	49	14.4	89.5	151.1	201.3			2.2
2001	49	1.8	93.8	143.0	194.7			2.2
2002	48	1.0	104.6	146.1	203.3			2.2
2003			74.8	89.1	126.7			2.2
2004			56.6	67.0	97.4			2.2
2005			26.0	26.7	39.7			2.2
2006			0.7	0.7	1.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
Subtot	368	47.7	917.5	1374.0	1722.3	310.2	204.8	

Recurring costs include installation which is currently budgeted in the year in which the effort occurs.

Appropriation: 1205 Military Construction, Navy

1992				7.7	8.6	2.7	1.8	2.8
1993								2.4
1994								2.4
1995				10.9	13.0			2.3
1996				5.9	7.2			2.3
Subtot				24.5	28.8	2.7	1.8	
Grand Total	393	47.7	957.8	1900.3	2265.4	631.0	493.5	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Full rate production was approved by the Acquisition Decision Memorandum dated 28 April 1993 at a full rate base of 53 per year. A production break currently exists between FY-95 and FY-99. Minimum sustaining production is 36 units.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	129.8	168.0	274.3	-38.2	+106.3
Procurement Qty	36	63	135	-27	+72
Proc. Unit Cost	3.606	2.667	2.032	+0.939	-0.635
FY 1995					
Procurement Cost	60.7	63.9	230.4	-3.2	+166.5
Procurement Qty	0	0	71	0	+71
Proc. Unit Cost	N/A	N/A	3.245	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	1089.9	1006.3	618.1	+83.6	-388.2

c. (U) Deliveries (Plan/Actual) —

	To Date
RDT&E	7/7
Procurement	24/24

d. (U) Approved Design-to-Cost Objective —

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 376 - @ Peak Rate: 5.0/mo			
FY 90 Base-Year $	2.504	2.605	2.504
Then Year $	0.000	0.000	0.000
@ Qty 116 (1st three years) - @ Peak Rate: 4.5/mo			
FY 90 Base-Year $	2.504	1.598	2.504
Then Year $	0.000	1.753	0.000

Design to Unit Production Costs were established in Base Year $ only for the total production quantity only (first three years not separately specified). Current estimate includes a Medium Data Rate communications capability not included in DTUPC configuration.

18. (U) Operating and Support Costs:

18a. (U) Operating and Support Costs (Cont'd):

a. (U) Assumptions and Ground Rules --

The operating and support costs are the sum of all costs resulting from the operation, maintenance and support of the terminals after acceptance into the Navy inventory. The operating costs are the sum of the cost of operating personnel and facilities, in addition to energy and software maintenance. The prime equipment inventory objective consists of 239 ship, 82 Submarine, 50 Shore, 9 Training, and 6 Support terminals.

Support costs include the following: (1) corrective maintenance labor and material at Organizational/Intermediate (O/I) and depot levels, (2) packaging and shipping costs incurred as a result of shipping failed and repaired items between organizational and depot level maintenance facilities, (3) preventive maintenance labor and material costs, (4) Support and Test equipment maintenance and material costs, (5) O/I and depot level maintenance shop spare costs, (6) O/I and depot level inventory storage cost, (7) documentation maintenance costs, (8) replenishment spare costs, (9) supply system management costs and, (10) the cost of training operators and O/I and depot level maintenance personnel.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg. Annual Cost Per Terminal	N/A
Personnel	18.0	N/A
Direct Depot Maintenance	39.0	N/A
Sustaining Investment	41.0	N/A
Other Direct Costs	0.0	N/A
Total	98.0	N/A

c. (U) Contractor Support Costs -- None.

DoD-3 UTTMDS

92-024

**[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: UTTMDS

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Upper Tier Theater Missile Defense System (UTTMDS)

2. (U) DoD Component: OSD

3. (U) Responsible Office and Telephone Number:
Ballistic Missile Defense Organization, The Pentagon
Washington, DC 20301-7100
MG Gen Malcolm O'Neill (Acting)
Assigned: February 1, 1993
AV 225-7060 COMM (703) 695-7060

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603216C (Shared) Project A2104 (Shared), A2210, A3304
PE 0604225C (Shared) Project A2210, A2104 (Shared)
PE 0603218C (Shared) Project A3304

5. (U) Related Programs:
SDS-GPALS

[redacted]

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MAY 20 1993 3

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

**[redacted]

6. (U) Mission and Description:
The Upper Tier Theater Missile Defense System (UTTMDS) mission is to defend against Theater Ballistic Missiles (TBMs) at long ranges and high altitudes. With its long range intercept capability, UTTMDS will make possible the protection of broadly dispersed assets and population centers against TBM attacks. The initial UTTMDS architecture consists of the Theater High Altitude Area Defense (THAAD) System, which uses the Theater Missile Defense - Ground Based Radar (TMD-GBR) as its surveillance and fire control sensor. The THAAD and TMD-GBR Demonstration/Validation (Dem/Val) programs will include building a prototype "battery" called the User Operational Evaluation System (UOES). The UOES will be used for early operational assessment and testing but also has the potential to be deployed during a national emergency. This initial UTTMDS capability is expected to grow with the addition of ship-based, airborne, space-based or other land-based elements to fully meet future user requirements. The UTTMDS does not replace another system.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In 1983 the President challenged the U.S. scientific community to investigate whether new technologies could be used to counter nuclear ballistic missiles. Shortly after this challenge, the President directed that an intensive analysis be conducted to identify the most promising technologies. The results of the Defensive Technologies (Fletcher) Study provided the basis for the initial actions to structure the technology content and management organization of the Strategic Defense Initiative (SDI) Program. In April 1984, the Secretary of Defense established the Strategic Defense Initiative Organization (SDIO) as a Defense Agency. As a result of the research, technical progress and successes in tests of evolving technologies, the Under Secretary of Defense for Acquisition in September 1987, approved the recommendation of the Defense Acquisition Board (DAB) for selected SDI concepts and technologies to enter the Demonstration/Validation phase of the defense acquisition process, Milestone I. During the President's State of the Union address on 29 January 1991, he directed a refocus of the SDI Program to "...provide protection from limited ballistic missile strikes, whatever their source." On 12 September 1991, an Acquisition Decision Memorandum (ADM) was signed by the Under Secretary of Defense (Acquisition) which authorized six Major Defense Acquisition Programs (MDAPs) for SDIO. These MDAPs were established based on an internal DOD "White Paper" which outlined SDIO's management strategy to USD(A) for these programs. On 5 December 1991, the President signed into law the FY 1992 Defense Authorization Act, which included the Missile Defense Act of 1991. On 28 January 1992, the Acquisition Decision Memorandum (ADM) was signed authorizing Milestone I for UTTMDS. Following Milestone I approval, Request for Proposals for the THAAD and TMD-GBR

7a. (U) Program Highlights (Cont'd):

Demonstration/Validation phase of UTTMDS was released to industry. The initial Selected Acquisition Report (SAR) was submitted to Congress in March 1992.

b. (U) Significant Developments Since Last Report --
The Demonstration/Validation contracts for THAAD and TMD-GBR were awarded in September 1992, to Lockheed Missile and Space Corporation and Raytheon. Both the THAAD and TMD-GBR Project Offices were assigned to the Program Executive Office, Global Protection Against Limited Strikes in July, 1992. This is an RDT&E only SAR in accordance with Title 10, United States Code, Section 2432, "Selected Acquisition Reports".

UTTMDS is expected to satisfy its mission requirements.

c. (U) Changes Since As Of Date --
A System Design Review (SDR) was successfully completed for the TMD-GBR Demonstration/Validation radar in January 1993. A TMD-GBR Software Specification Review was held in March, 1993.

The THAAD Initial Design Review (IDR) was conducted 20-21 January 1993. Missile weight has grown due to flight test safety requirements and a conservative design approach for the prototype missiles.

In May 1993 Secretary of Defense, Mr. Aspin, announced the renaming of the Strategic Defense Initiative Organization as the Ballistic Missile Defense Organization. Theater ballistic missile defense is BMDO's first priority to cope with the dangers of the post-Cold War era.

8. (U) Threshold Breaches:
There have been no threshold breaches to the Acquisition Program Baseline dated 28 January 1992. Because this program is pre-Milestone II and Nunn-McCurdy unit cost reporting does not apply, there have been no unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Planning Estimate	Approved Program	Current Estimate
Army Concept Definition Studies Complete	MAY 92	MAY 92	MAY 92

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
Milestone I Review	JAN 92	JAN 92	JAN 92
THAAD Dem/Val Contract Award	JUN 92	JUN 92	SEP 92(Ch-1)
GBR Dem/Val Contract Award	JUN 92	JUN 92	SEP 92(Ch-1)
Integrated System Test Start	JUL 95	JUL 95	SEP 95(Ch-2)
System Delivery Complete (Less Missiles and Radars)	JUL 96	JUL 96	SEP 96(Ch-2)
Delivery of Optional 40 UOES Missiles Complete	TBD	TBD	TBD
Milestone II DAB Review	JUL 96	JUL 96	SEP 96(Ch-2)
THAAD EMD Contract Award	AUG 96	AUG 96	OCT 96(Ch-2)
GBR EMD Contract Award	AUG 96	AUG 96	OCT 96(Ch-2)
LRIP Review	FEB 99	FEB 99	APR 99(Ch-2)
Milestone III DAB Review	JUL 01	JUL 01	SEP 01(Ch-2)
FUE	JUL 01	JUL 01	SEP 01(Ch-2)
IOC	TBD	TBD	TBD

b. (U) Previous Change Explanations --

The THAAD Dem/Val contract award delay from JUN 92 to JUL 92 was caused by late release of the RFP. The GBR Dem/Val contract award changed from JUN 92 to AUG 92 to accommodate a RFP amendment required by the Missile Defense Act of 1991.

c. (U) Current Change Explanations --

Ch-1 The THAAD Dem/Val contract award was changed from JUL 1992 to SEP 92 to reflect actual date. The GBR Dem/Val contract award was changed from AUG 92 to SEP 92 to reflect actual date.

Ch-2 The delay in the Dem/Val contract awards resulted in changes of the following subsequent major Milestones:

Integrated System Test Start from JUL 95 to SEP 95
System Delivery Complete from JUL 96 to SEP 96
Milestone II DAB Review from JUL 96 to SEP 96
THAAD EMD Contract Award from AUG 96 to OCT 96
GBR EMD Contract Award from AUG 96 to OCT 96
LRIP Review from FEB 99 to APR 99
Milestone III DAB Review from JUL 01 to SEP 01
FUE from JUL 01 to SEP 01

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Planning Estimate:
ADM (dated 28 JAN 92) Subject: Milestone I Approval.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:
ADM (dated 28 JAN 92) Subject: Milestone I Approval.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	3165.2	3165.2	3198.8
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 88 Base-Year $	3165.2	3165.2	3198.8
Escalation	1158.5	1158.5	915.9
Development (RDT&E)	(1158.5)	(1158.5)	(915.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	4323.7	4323.7	4114.7

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	N/A	0
Total	0	0	0

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:
ADM (dated 28 JAN 92) Subject: Milestone I Approval.

11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	4323.7	0.0	0.0	4323.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-252.4	-	-	-252.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+66.2	-	-	+66.2
Estimating	-40.4	-	-	-40.4
Other	-	-	-	-
Support	+17.6	-	-	+17.6
Subtotal	-209.0	-	-	-209.0
Total Changes	-209.0	-	-	-209.0
Current Estimate	4114.7	-	-	4114.7

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	3165.2	0.0	0.0	3165.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+53.0	-	-	+53.0
Estimating	-32.3	-	-	-32.3
Other	-	-	-	-
Support	+12.9	-	-	+12.9
Subtotal	+33.6	-	-	+33.6
Total Changes	+33.6	-	-	+33.6
Current Estimate	3198.8	-	-	3198.8

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-252.4
Adjustment for Current & Prior Inflation. (Estimating)	+12.7	+15.3

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Adjustment for decreased software lines of code (Estimating)	-27.2	-33.7
Revised estimate based on contract award (Estimating)	-11.2	-13.1
Revised future years risk mitigation efforts due to current efforts (Estimating)	-6.6	-8.9
Addition of Solid State Demonstration Array Design for risk mitigation (Engineering)	+53.0	+66.2
Revised Estimate for Additional Targets Requirements (Support)	+12.9	+17.6
RDT&E Subtotal	+33.6	-209.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) THAAD Dem/Val:
Lockheed Missiles & Space, Sunnyvale, CA
DASG60-92-C-0101, CPFF
Award: September 4, 1992
Definitized: September 4, 1992

Initial Contract Price Target	Ceiling	Qty
$688.9	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$730.7	N/A	0	$730.7	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$-4.8	$-5.2
Net Change	$-4.8	$-5.2

Explanation of Change:

The cumulative unfavorable schedule variance is primarily due to a

15. (U) Contract Information (Cont'd):
LMSC missile design change which impacted planned accomplishments for LMSC and their subcontractors. The revision of design plans also caused a delay in material orders. The modified design is being incorporated into the baseline. LMSC anticipates flight test vehicles 01 and 02 to be delivered on schedule and all material orders to be received to support delivery schedules.

The cumulative unfavorable cost variance is primarily due to redesign activities required to accommodate the increase in missile size. In addition, LMSC employee experience level labor mix is higher than the planned average in order to successfully accomplish initial program organization tasks. LMSC does not expect any cost impact at the total contract level. Net changes are not significant in relation to current contract cost.

The Program Manager's Estimate at Completion is not shown due to sensitivity of contract execution.

(U) GBR Dem/Val:	Initial Contract Price		
	Target	Ceiling	Qty
Raytheon Corporation, Wayland, MA DASG60-92-C-0184, CPIF/AF Award: September 17, 1992 Definitized: September 17, 1992	$318.4	N/A	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$318.4	N/A	3	$318.4	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/26/93)	$0.3	$-1.1
Net Change	$0.3	$-1.1

Explanation of Change:

The prime contractor, Raytheon Company, experienced a slower ramp-up in initial staffing than planned and an additional design iteration of the production version of the Solid State Transmit/Receiver (T/R) module for the antenna array was added. This led to a small schedule variance. Raytheon has added their Quincy production facility to produce modules. Raytheon has baselined cost and schedules to an internal accelerated delivery of the three radars in order to maximize incentive fee. The current schedule variance does not impact contractual requirements. Net changes are not significant in relation to current contract cost.

15. (U) Contract Information (Cont'd):
The Program Manager's Estimate at Completion is not shown due to sensitivity of contract execution.

(U) TMD Targets Program:	Initial Contract Price Target	Ceiling	Qty
Coleman Research, Orlando, FL DASG60-92-C-0217, CPFF Award: October 14, 1992 Definitized: October 14, 1992	$144.2	N/A	75

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$144.2	N/A	75	$144.2	$144.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (02/28/93)	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change:

Cost and schedule variances are not available because the contractor's performance measurement system has not been validated.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 25.0% (2 yrs/8 yrs)

(2) Percent Program Cost Appropriated: 12.7% ($522.7 / $4114.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	522.7	749.8	617.7	2224.5	4114.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	522.7	749.8	617.7	2224.5	4114.7

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 0400 RDT&E, Defense Agencies

1992				101.0	119.6	115.0	81.8	2.8
1993				332.8	403.1	389.1	32.5	2.4
1994				604.8	749.8			2.4
1995				487.1	617.7			2.3
1996				428.9	556.1			2.3
1997				632.4	838.0			2.2
1998				549.8	744.6			2.2
1999				62.0	85.8			2.2
Subtot				3198.8	4114.7	504.1	114.3	
Grand Total				3198.8	4114.7	504.1	114.3	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

b. (U) Not applicable for Pre-Milestone II programs.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Not applicable for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

4-26 MIDS - LVT

92-135

*** UNCLASSIFIED ***

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MIDS

AS OF DATE: December 31, 1992

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MAY 25 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Multifunctional Information Distribution System - Low Volume Terminal (MIDS - LVT)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PEO for Space, Comms & Sensors
MIDS Program
2451 Crystal Drive
Arlington, VA 22245-5200

Capt. John O'Connell
Assigned: April 29, 1993
AV 332-4335 COMM (703) 602-4335

No Security Objection to Open Publication (AS AMENDED)
93-C-0473
MAY 25 1993
Office of the Chief of Naval Operations
Dept. of the Navy

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0205604N (Shared) Project P2126
PE 0604771D (Shared) Project P773

5. Related Programs:
E-2C HAWKEYE Carrier-Based Airborne Early Warning Aircraft; F/A-18 Hornet; Joint Tactical Information Distribution System (JTIDS).

6. Mission and Description:
The Multifunctional Information Distribution System (MIDS) is a multinational (U.S., France, Germany, Italy, and Spain) cooperative development program established to design, develop and deliver low-volume (LV), lightweight tactical information system terminals for U.S. fighter aircraft as well as foreign fighter aircraft,

6. Mission and Description (Cont'd):

helicopters, ships and ground sites. The terminals will be designed as a Pre-Planned Product Improvement (P3I) of the JTIDS Time Division Multiple Access (TDMA) Class 2 terminals. The goal of the MIDS program is to produce a terminal that is smaller, lighter, fully compatible with, and as capable as the JTIDS TDMA Class 2 terminals but suitable for use on platforms that cannot accommodate the bulkier, heavier JTIDS TDMA Class 2 Terminals. The first U.S. Navy planned application of a MIDS terminal is on the F/A-18. The MIDS terminal does not replace an existing DoD system.

7. Program Highlights:

a. Significant Historical Developments --

In April 1986, following enactment of the Nunn-Quayle Amendment to the Arms Export Control Act, the Under Secretary of Defense for Research and Engineering (USD(R&E)) proposed a NATO cooperative development of the JTIDS low-volume (LV) Class 2 terminal (the MIDS LV terminal), which would be smaller, lighter, fully compatible with, and as capable as the JTIDS Class 2 terminal. The proposal called for the U.S. to lead the project and for a U.S. contractor to lead an international industrial team (Principal Study Contract Team (PSCT)) in performing the MIDS Project Definition Phase (Phase I) analyses. In June 1986, the USAF was assigned to represent the U.S. in Phase I. In early 1987, a Memorandum of Understanding (MOU) signed by the Under Secretary of Defense for Acquisition (USD(A)) and equivalent officials from each of the other nations formalized agreement for Phase I. The MOU stipulated Singer-Kearfott (now GEC-Marconi) as the lead U.S. contractor.

In 1987, each nation awarded a Phase I contract to one of their national contractors to cooperatively define the requirement for a MIDS LV terminal; address the feasibility of producing the terminal; and produce a detailed plan for Engineering and Manufacturing Development (EMD) of the MIDS LV terminal. Singer-Kearfott was the U.S. contractor. The PSCT delivered a Phase I End-of-Study report in early 1989.

On 11 May 1989, the Under Secretary of the Navy (UNSECNAV) determined that the MIDS LV terminal would be the most effective means to incorporate TADIL J capability into the F/A-18. Concurrently, the USAF determined that the F-16 should no longer be a candidate for the MIDS LV terminal. On 30 October 1989, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)), determined that only the Navy has a MIDS platform requirement and requested that it take the lead in MIDS with USAF support.

The Navy is operating under a Program Memorandum of Understanding (PMOU) with the nations of France, Germany, Italy, and Spain concerning general arrangements, and Supplement No.1 to the PMOU concerning initial program administration and pre-engineering and

7a. Program Highlights (Cont'd):

manufacturing development (Pre-EMD) for the multinational MIDS-LVT development effort. The PMOU and its Supplements specify each country's share of the resource requirement for commonly funded items, with the U.S. share being 41%. The PMOU and its Supplements also require that specific national requirements be funded by the nation levying the requirement.

The Pre-EMD Phase of the program established an International Program Office (IPO). Optional national EMD risk reduction efforts are continuing during this phase. The Request for Proposal (RFP) for the design, manufacture, and testing of MIDS LV developmental terminals was issued in March 1992. The response to the RFP is being evaluated and the proposed contract will be negotiated, but not awarded, during Pre-EMD. Award is scheduled for July 1993.

The participants are drafting Supplement No. 2 to the PMOU concerning the EMD phase in anticipation of Milestone II, scheduled for June 1993. EMD efforts will include design, development, manufacture, test and evaluation of prototypes to establish the detailed final design of the MIDS LV terminal, and delivery of the MIDS manufacturing data package.

Concurrently with the MIDS-LVT decisions, the Navy initiated a Pre-EMD study with McDonnell-Douglas in June 1991. The purpose of this study was to determine the installation/integration requirements for MIDS-LVT aboard the F/A-18 aircraft. Results of the Pre-EMD effort have generated a draft Statement of Work for the follow-on EMD effort. The EMD effort will modify the F/A-18 operational software, and install and test the MIDS-LVT system in the aircraft environment.

This SAR presents the Pre-EMD and EMD phases of the MIDS-LVT program and reports only the U.S. share of the costs.

This is the initial Selected Acquisition Report for this program.

b. Significant Developments Since Last Report --
This is the initial SAR. The MIDS LV terminal is expected to satisfy the mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

An Acquisition Program Baseline has not yet been approved. Nunn McCurdy unit cost reporting is not applicable since this is a Pre-Milestone II RDT&E only SAR.

9. Schedule:

a. Milestones --	Planning Estimate	Approved Program	Current Estimate
Milestone II (DAB)	JUN 93	N/A	JUN 93
Development Contract Award	JUL 93	N/A	JUL 93
F/A-18 Integration Contract Award (NAVAIR)	MAR 94	N/A	MAR 94
Terminal Critical Design Review	MAR 95	N/A	MAR 95
First EMD Terminal Delivery (IRT 1)	APR 97	N/A	APR 97
First EMD Flight	DEC 97	N/A	DEC 97
Low-Rate Production Contract Award	OCT 98	N/A	OCT 98
TECHEVAL			
Start	JUN 00	N/A	JUN 00
Complete	JUN 00	N/A	JUN 00
OPEVAL			
Start	SEP 00	N/A	SEP 00
Complete	SEP 00	N/A	SEP 00
Low-Rate Initial Production First Delivery	OCT 00	N/A	OCT 00
Initial Operational Capability	DEC 00	N/A	DEC 00
Milestone III (DAB)	JAN 01	N/A	JAN 01
Full Rate Production Contract Award	JUN 01	N/A	JUN 01
Organic Support Capability Date	JUN 03	N/A	JUN 03
Service Depot Support Date	DEC 03	N/A	DEC 03

Acronyms:
IRT - Integration Readiness Testing

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY 1994 President's Budget dated April 8, 1993.

Approved Program: None.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Coded Data Rate (Kbps)					
Standard Packing	28.8	N/A	/ N/A		28.8
Packed 2 DP	57.6	N/A	/ N/A		57.6
Packed 4 DP	115.2	N/A	/ N/A		115.2
Relay Range (nm)	1200	N/A	/ N/A		1200
Communication Range (NM)	300	N/A	/ N/A		300
Voice Channels	2	N/A	/ N/A		2
Coded Message Error Probability (%)	1	N/A	/ N/A		1
MTBF(hr)(lab)	1000	N/A	/ N/A		1000
MFHBMCF(hr)(field)	300	N/A	/ N/A		300
MTTR (O-level) (min)	30	N/A	/ N/A		30
Volume (dm3)	16.4	N/A	/ N/A		16.4
Weight (kg)	29.5	N/A	/ N/A		29.5
Jam Resistance	*	N/A	/ N/A		*

Footnotes:

Relay Range - Objective - Low data rate.

MTBF - 1250 Hour reliability prediction analysis required prior to reliability testing.

MFHBMCF - Demonstration of this performance criteria will not be possible prior to OPEVAL/MS III. This value includes both hardware and software failure.

Volume (dm3), Weight (kg) - Combined main terminal and remote power supply, Type 1.

* Refer to JTIDS TEMP, J357 Update #1, Navy Annex Tab A for classified Navy unique acceptable performance requirements.

Acronyms:
DM3 - Cubic Decimeters
DP - Double Pulse
KBPS - Kilobytes per second
KG - Kilograms
MFHBMCF - Mean Flight Hours Between Mission Critical Failures
MTBF - Mean Time Between Failures
MTTR - Mean Time to Repair
NM - Nautical miles

10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY 1994 President's Budget dated April 8, 1993.

Approved Program: None.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	481.3	0.0	481.3
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	481.3	0.0	481.3
Escalation	53.1	0.0	53.1
Development (RDT&E)	(53.1)	(0.0)	(53.1)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	534.4	0.0	534.4

b. Quantity --			
Development (RDT&E)	42	N/A	42
Procurement	0	N/A	0
Total	42	N/A	42

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
FY 1994 President's Budget dated April 8, 1993.

Approved Program: None.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	534.4	0.0	0.0	534.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	534.4	-	-	534.4

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	481.3	0.0	0.0	481.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	481.3	-	-	481.3

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. **Contract Information**: None.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 30.8% (4 yrs/13 yrs)

(2) Percent Program Cost Appropriated: 17.1% ($91.3 / $534.4)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY90-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2002)	Total
RDT&E	91.3	57.0	86.5	299.6	534.4
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	91.3	57.0	86.5	299.6	534.4

Footnote for 16a.(1): 30.8% program completed is for RDT&E program costs only.

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1990				3.0	2.9	2.9	2.8	4.0
1991				4.8	4.7	4.7	4.2	4.3
1992				9.9	10.0	10.0	8.9	2.8
1993				13.1	13.6	8.8	0.3	2.4
1994				21.8	23.2			2.4
1995				33.9	36.9			2.3
1996				37.0	41.2			2.3
1997				19.0	21.6			2.2
1998				10.2	11.8			2.2
1999				2.5	3.0			2.2
2000				34.1	41.4			2.2
2001				22.3	27.7			2.2
2002				6.0	7.6			2.2
Subtot	28			217.6	245.6	26.4	16.2	
Navy	28			217.6	245.6	26.4	16.2	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 0400 RDT&E, Defense Agencies								
1990				9.4	9.0	9.0	4.7	4.0
1991				5.1	5.0	5.0	3.0	4.3
1992				16.3	16.5	16.4	8.0	2.8
1993				28.5	29.6	5.0		2.4
1994				31.8	33.8			2.4
1995				45.6	49.6			2.3
1996				45.3	50.4			2.3
1997				35.2	40.0			2.2
1998				25.8	30.0			2.2
1999				12.6	15.0			2.2
2000				4.9	5.9			2.2
2001				3.2	4.0			2.2
Subtot	14			263.7	288.8	35.4	15.7	
DoD	14			263.7	288.8	35.4	15.7	
Grand Total	42			481.3	534.4	61.8	31.9	

Obligations and expenditures reflect program office records as of April 9, 1993.

17. **Production Rate Data:**

a. Production Baseline Rate - None.

b. Not applicable for Pre-Milestone II programs.

c. Deliveries (Plan/Actual) -- None.

d. Not applicable for Pre-Milestone II programs.

18. **Operating and Support Costs:**

Not applicable for Pre-Milestone II programs.

AF-17 JPATS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JPATS

AS OF DATE: December 31, 1992

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. **Designation and Nomenclature (Preferred Name):**
   Joint Primary Aircraft Training System/JPATS

2. **DoD Component:** USAF

   Joint Participants:
   USAF/USN

3. **Responsible Office and Telephone Number:**

Aeronautical Systems Center/YT-P	COL JAMES K. WANSACK
Wright-Patterson AFB	Assigned: April 20, 1990
Dayton, OH 45433-6503	AV 785-2896 COMM (513)255-2896

4. **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0603208N (Shared) Training System A/C
   Project H1150
   PE 0604233F (Shared) SUPT
   Project 644102

SAF/PAS
93-220 -T

5. **Related Programs:**
None.

6. **Mission and Description:**
The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN venture to replace USAF's T-37B aircraft, USN's T-34C

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6. Mission and Description (Cont'd):

aircraft, and their associated Ground Based Training Systems (GBTS). The aircraft and GBTS will be used to train entry level student aviators in the fundamentals of flying so they can transition into advanced training tracks leading to qualification as military pilots, navigators, and Naval Flight Officers. Navy aircraft and GBTS will also be required to train students in elements of pilot training beyond primary and in undergraduate Naval Flight Officer training.

The program includes the purchase of aircraft, simulators, and associated ground-based training devices, training management system, instructional courseware, and logistic support. The USAF will train at 6 bases and the USN at 3 bases. The USAF will have contract logistics support for the aircraft off-equipment and the GBTS. The aircraft on-equipment will be third party contractor or organically supported. The USN will employ contractor logistics support for the aircraft and GBTS.

7. Program Highlights:

a. Significant Historical Developments --

On 15 Feb 1989, the DOD Trainer Masterplan was approved, identifying JPATS as an opportunity for Common Replacement for the T-34C/T-37B with associated GBTS.

In Dec 1990, A Memorandum Of Understanding (MOU) was signed by the following: USAF Chief of Staff, USN Chief of Naval Operations, Assistant Secretary of the Air Force (Acquisition), Assistant Secretary of the Navy for Research, Development and Acquisition, documenting the services agreement to acquire a joint primary trainer.

In Oct 1991, the Mission Need Statement was validated by the Joint Requirements Oversight Council (JROC); the Air Force Chief of Staff and Navy Vice Chief of Naval Operations co-chaired a requirements summit which baselined JPATS critical requirements; and the Joint Services Operational Requirements Document (JSORD) was published.

In Jan 1992, the Joint Acquisition Strategy Panel (JASP) was completed setting the program strategy. On 29 May 1992, Conventional Systems Committee (CSC) determined that the program was ready for the Defense Acquisition Board (DAB) review.

b. Significant Developments Since Last Report --

This is the Initial SAR for the JPATS program. This report is limited to RDT&E in accordance with Title 10, United States Code, Section 2432, "Selected Acquisition Reports" (reference(g)).

The JPATS Program is expected to meet Mission Requirements.

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date --
On 19 Jan 1993, the Defense Acquisition Board conducted a Milestone 0/I Review. Milestone 0 was approved with the Air Force designated lead service. The dated Acquisition Program Baseline was also approved on 19 Jan 93. Milestone I was approved contingent upon completion of several actions prior to Request For Proposal(RFP) release. Actions included Undersecretary of Defense for Acquisition USD(A) approval of the acquisition strategy report which is to include seperate and sequential aircraft and Ground Based Training System competitors. USD(A) review and approval of the RFP was also included as an action item.

8. Threshold Breaches:
There are no breaches to the Approved Acquisition Program Baseline dated 19 Jan 93, and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Planning Estimate	Approved Program	Current Estimate
Milestone 0/I	JAN 93	JAN 93	JAN 93
Milestone II	JUN 94	JUN 94	JUN 94
Manufacturing Development Contract Award	JUL 94	JUL 94	JUL 94
Aircraft Preliminary Design Review (PDR)	DEC 94	DEC 94	DEC 94
Low Rate Initial Production Option (LRIP) Exercise Award	FEB 95	FEB 95	FEB 95
GBTS Contract Award	FEB 95	FEB 95	FEB 95
Full Rate Production Contract Award	JUL 98	JUL 98	JUL 98
Aircraft Critical Design Review (CDR)	JUN 95	JUN 95	JUN 95
Operational Flight Trainer (OFT) PDR	AUG 95	AUG 95	AUG 95
Operational Flight Trainer CDR	FEB 96	FEB 96	FEB 96
DT&E Start	SEP 96	SEP 96	SEP 96
DT&E Finish	FEB 97	FEB 97	FEB 97
First Aircraft Delivery (AF)	MAR 97	MAR 97	MAR 97
Multi-Service Operational Test & Evaluation (MOT&E) Start	NOV 97	NOV 97	NOV 97
MOT&E Finish	MAR 98	MAR 98	MAR 98
Milestone III	JUN 98	JUN 98	JUN 98
OFT First Delivery (Randolph AFB)	JUL 98	JUL 98	JUL 98
OFT DT/OT&E Start	FEB 98	FEB 98	FEB 98
OFT DT/OT&E Finish	JUL 98	JUL 98	JUL 98

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
Initial Operational Capability (AF)	MAR 00	MAR 00	AUG 00(Ch-1)
Full Operational Capability (AF)	SEP 07	SEP 07	SEP 07
Initial Operational Capability (Navy)	APR 03	APR 03	APR 03
Full Operational Capability (Navy)	SEP 10	SEP 10	SEP 10

b. Previous Change Explanations --

There are no previous changes, this is an initial SAR.

c. Current Change Explanations --

(Ch-1) Initial Operational Capability (IOC) (AF) changed from Mar 00 to Aug 00, Reduction in an upfront buy profile caused insufficient quantity to meet the Mar 00 IOC.

d. References --

Planning Estimate:
Program Management Directive 1104(12)
/0604233F/0604227F/0804741F/0804748F, 18 MAR 92.

Approved Program:
DAE Approved Acquisition Program Baseline dated 19 January 1993.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Syllabus Maneuvers Mission Profiles (Contact, Familiarization, Precision Aerobatics, Instrument, and Navigation - High and Low)	Accomplish all five mission profiles	Accomplish all five mission profiles	/ Accomplish all five mission profiles	TBD	Accomplish all five mission profiles
Sustained Speed at 1000 ft MSL, hot day (KTAS)	270	270	/ 250 (270 Dash)	TBD	250 (270 Dash)

10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Operational G Envelope (Gs)	+7 to -3 symmetric	+7 to -3 / +6 to -3 symmetric; +4 to 0 asymmetric	TBD	+6 to -3 symmetric; +4 to 0 asymmetric
Pressurization (PSI Differential)	5.0	5.0 / 3.5	TBD	3.5
Bird Strike Capability (4 lb bird, no catastropic damage) (KTAS)	Max Low Level Airspeed	Max Low Level Airspeed / 270	TBD	270
Ejection Seat with Survival Kit (Altitude/Airspeed in Knots)	0/0	0/0 / 0/60	TBD	0/60
Able To Perform an Engine Out Landing	Unprepared surface	Unprepared surface / Runway	TBD	Runway
Anthropometric Accommodation (Sitting Height in inches)	32.4 to 41.4	32.4 to 41.4 / 34 to 40	TBD	34 to 40
Able to be Flown Operationally from Either Cockpit	Interchangeable Instructor/ Student	Interchangeable Instructor/ Student / Yes	TBD	Yes
Stepped Tandem	0 Degree Over-the-Nose Visibility from the Rear Cockpit at Design Eye Height	0 Degree Over-the-Nose Visibility from the Rear Cockpit at Design Eye Height / Yes	TBD	Yes

10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Exterior Noise	FAR Part 36, Most Restrictive Applicable Standard	FAR Part 36, Most Restrictive Applicable Standard	/ FAR Part 36, Most Restrictive Applicable Standard	TBD	FAR Part 36, Most Restrictive Applicable Standard
Takeoffs/Touch & Go/Land (Wx, Weight, Configuration) at Main Operating Bases (Runway Length - FT)	4000	4000	/ 5000	TBD	5000
IFR Certified Instrumentation	All Digital except Backups	All Digital except Backups	/ IFR Certified (Selectable ADI/HSI)	TBD	IFR Certified (Selectable ADI/HSI)
Visual System (GBTS)	Yes	Yes	/ Yes	TBD	Yes

b. Previous Change Explanations --

There are no previous changes since this is an initial SAR.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
Program Management Directive 1104(12)
/0604233F/0604227F/0804741F/0804748F, 18 MAR 92.
Operational Requirements Document dated 3 April 1992.

Approved Program:
DAE Approved Acquisition Program Baseline dated 19 January 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	229.3	229.3	231.5
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	229.3	229.3	231.5
Escalation	48.0	48.0	34.8
Development (RDT&E)	(48.0)	(48.0)	(34.8)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	277.3	277.3	266.3

All end items are considered fully configured.

b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	N/S	N/A	0
Total	2	2	2

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
Program Management Directive 1104(12)
/0604233F/0604227F/0804741F/0804748F, 18 MAR 92.
Operational Requirements Document, dated 3 April 1992.

Approved Program:
DAE Approved Acquisition Program Baseline dated 19 January 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	277.3	0.0	0.0	277.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-12.9	-	-	-12.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.9	-	-	+1.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-11.0	-	-	-11.0
Total Changes	-11.0	-	-	-11.0
Current Estimate	266.3	-	-	266.3

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	229.3	0.0	0.0	229.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.8	-	-	+1.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.8	-	-	+1.8
Total Changes	+1.8	-	-	+1.8
Adjustments	+0.4	-	-	+0.4
Current Estimate	231.5	-	-	231.5

There are no previous changes since this is an initial SAR.

b. Previous Change Explanations --

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E Revised economic escalation indices. (Economic)	N/A	-12.9

13c. **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
Air Force (Non-Add)	N/A	-10.8
Navy (Non-Add)	N/A	-2.1
Refinement of Program Estimate (Estimating)	+1.8	+1.9
RDT&E Subtotal	+1.8	-11.0

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with 10 USC 2433.

15. **Contract Information:**

Contract Award is estimated to be 1 JUL 94.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 11.8% (2 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 1.2% ($3.2 / $266.3)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2008)	Total
RDT&E	3.2	45.2	61.0	156.9	266.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3.2	45.2	61.0	156.9	266.3

Program Funding Summary reflects the FY94 PB.

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1994			3.3	3.3	3.6			2.4
1995			5.9	5.9	6.6			2.3
1996			4.9	4.9	5.6			2.3
1997			7.3	7.3	8.6			2.2
1998			6.6	6.6	7.9			2.2
1999			6.4	6.4	7.8			2.2
Subtot	1		34.4	34.4	40.1			
Navy	1		34.4	34.4	40.1			

Program Funding Summary reflects FY94 PB.

Appropriation: 3600 Research, Development, Test + Eval, AF								
1992			1.1	1.1	1.1	1.0	0.8	2.8
1993			2.0	2.0	2.1	0.5	0.1	2.4
1994			38.0	38.0	41.6			2.4
1995			48.5	48.5	54.4			2.3
1996			58.7	58.7	67.3			2.3
1997			29.9	29.9	35.0			2.2

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1998			4.7	4.7	5.6			2.2
1999			1.7	1.7	2.1			2.2
2000			1.5	1.5	1.9			2.2
2001			1.5	1.5	1.9			2.2
2002			1.5	1.5	2.0			2.2
2003			1.5	1.5	2.0			2.2
2004			1.5	1.5	2.0			2.2
2005			1.5	1.5	2.1			2.2
2006			1.5	1.5	2.1			2.2
2007			1.0	1.0	1.5			2.2
2008			1.0	1.0	1.5			2.2
Subtot	1		197.1	197.1	226.2	1.5	0.9	
USAF	1		197.1	197.1	226.2	1.5	0.9	
Grand Total	2		231.5	231.5	266.3	1.5	0.9	

Expenditures and Obligations reflect program office records as of 12 MAR 93.

17. **Production Rate Data:**

a. Production Baseline Rate

This program is Pre-Milestone II and no full rate production decision has been determined.

b. Not applicable for Pre-Milestone II programs.

c. Deliveries (Plan/Actual) -- None.

d. Not applicable for Pre-Milestone II programs.

18. **Operating and Support Costs:**

Not applicable for Pre-Milestone II programs.

N-29 - MLR

92-136

*** UNCLASSIFIED ***

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MLR

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
Medium Lift Replacement (MLR)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
MLR Program Office
1411 Jefferson Davis Hwy.
Naval Air Systems Command
Washington, DC 20361-1250

CAPT T. Davis
Assigned: September 25, 1992
AV 222-0177 COMM (703) 692-0177

4. Program Elements/Procurement Line Items:

RDT&E:
PE 064262N

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FOR OPEN PUBLICATION

MAY 25 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs:
V-22 Osprey, Helicopter Development, CH-46 Replacem

6. Mission and Description:
The Medium Lift Replacement (MLR) is one of two alternative aircraft being considered to replace the CH-46E and the CH-53A/D, the other alternative is the V-22 Osprey. The MLR's primary mission, for the Marine Corps, will be to provide for the assault transport of Marines and their equipment during amphibious operations and subsequent operations ashore. The aircraft will have the capability to operate at night, in adverse weather, in a Nuclear-Biological-Chemical environment and over long distances in a high threat environment.

No Security Objection to Open Publication (AS AMENDED)
93-C-0414
MAY 25 1993
Director, Office of the Chief of Naval Operations
Dept. of the Navy

7. Program Highlights:

a. Significant Historical Developments --

On 2 July 1992, the Secretary of Defense, in a letter to the Speaker of the House of Representatives, proposed the start of a new medium lift helicopter technology and operational demonstration program. Program objective is to conduct helicopter trade studies and provide alternatives to a Cost and Operational Effectiveness Analysis (COEA) such that DoD will be in the position to make a final decision on effective affordable means to meet the medium lift aircraft needs of the Marine Corps. The MLR Concept Exploration implements the SECDEF direction to prove out the viability of advanced helicopter technology and its military operational usefulness.

A Milestone 0 review was held on 18 August 1992. In the subsequent Acquisition Decision Memorandum, the Navy's request to proceed with Concept Exploration and Definition was approved. The Under Secretary of Defense (Acquisition) also directed that a COEA be conducted with study briefing scheduled for September 1993 and final report due in October 1993. Milestone 1 was tentatively set for the first quarter of FY 1994.

On 1 September 1992, request for proposals (RFPs) were released, asking for proposals to perform concept exploration trade studies and investigate design characteristics for a Medium Lift Replacement (MLR) Helicopter. The trade studies will address threat considerations, operational concept definition, affordability, mission and system baseline performance requirements, and integrated logistic support.

Proposals were received on 1 October 1992. Source selection was approved on 19 October 1992.

Five competitive contracts of approximately $3M each were awarded on 22 October 1992, to Boeing Helicopters, Sikorsky Aircraft, McDonnell Douglas Helicopter Division, Piasecki Aircraft Corporation and Bell Helicopter Textron Incorporated, to look at new helicopter designs.

Three sole source contracts for MLR helicopter trade studies based on derivatives of existing aircraft were awarded to Boeing Helicopters to investigate modifications to the CH-46 and CH-47 ($2M); Sikorsky Aircraft to investigate modifications to the H-53 and H-60 ($2M); and E.H. Industries to investigate modification to the EH101 ($1M).

All studies should be completed within six months and will be used to feed NAVAIR notional designs used to support the COEA which is being completed by the Center for Naval Analysis (CNA). The COEA will examine the broad spectrum of cost and capability that is available to meet the requirements of the Marine Corps draft Operational Requirements Document (ORD) and will be completed in the 4th quarter, FY 93.

7b. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --
This is a Pre-Milestone II, RDT&E only SAR. This is the Initial SAR.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There are currently no threshold breaches as there has not been an acquisition program baseline established as of the preparation date of this report. Nunn McCurdy unit cost reporting does not apply since this is a Pre-Milestone II, RDT&E only SAR.

9. Schedule:

a. Milestones --

	Planning Estimate	Approved Program	Current Estimate
Milestone 0	AUG 92	N/A	AUG 92
Concept Exploration RFP Released	SEP 92	N/A	SEP 92
Contracts Awarded	OCT 92	N/A	OCT 92
Trade Study Reports	APR 93	N/A	APR 93
Cost and Operational Effectiveness Analysis (COEA) Completed	SEP 93	N/A	SEP 93
Definitize Requirement	DEC 93	N/A	DEC 93
Milestone I	JAN 94	N/A	JAN 94

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY 1994 Presidents Budget, dated April 8, 1993.

Approved Program: None.

10. Performance Characteristics:

a. Performance Characteristics -- None.

Performance characteristics will be defined as trade studies from contracts are completed and advanced helicopter candidates developed for the Cost and Operational Effectiveness Analysis. Currently a draft Operational Requirements Document is the baseline for conducting the trade studies.

10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY 1994 Presidents Budget, dated April 8, 1993.

Approved Program: None.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Planning Estimate	Approved Program	Current Estimate
Development (RDT&E)	35.0	0.0	35.0
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	35.0	0.0	35.0
Escalation	1.0	0.0	1.0
Development (RDT&E)	(1.0)	(0.0)	(1.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	36.0	0.0	36.0

b. Quantity --			
Development (RDT&E)	0	N/A	
Procurement	0	N/A	
Total	0	N/A	0

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
FY 1994 Presidents Budget, dated April 8, 1993.

Approved Program: None.

12. Program Acquisition/Current Procurement Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	36.0	0.0	0.0	36.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	36.0	-	-	36.0

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	35.0	0.0	0.0	35.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	35.0	-	-	35.0

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) - None.

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 66.7% (2 yrs/3 yrs)

(2) Percent Program Cost Appropriated: 86.9% ($31.3 / $36.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	31.3	4.7	-	-	36.0
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	31.3	4.7	-	-	36.0

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1992				21.7	22.0	22.0	4.4	2.8
1993				8.9	9.3			2.4
1994				4.4	4.7			2.4
1995								

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1996								
1997								
1998								
1999								
Subtot				35.0	36.0	22.0	4.4	
Grand Total				35.0	36.0	22.0	4.4	

1. Fiscal Year 94 through 99 is funded under "CH-46 Replacement Program".

2. Indices and escalation rates taken from OSD RDT&E Rates dtd 10 Jan 1992.

17. Production Rate Data:

a. Production Baseline Rate - None.

b. Not applicable for Pre-Milestone II programs.

c. Deliveries (Plan/Actual) -- None.

d. Not applicable for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

N-35 STRATEGIC SEALIFT

92-062

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OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: SEALIFT

AS OF DATE: December 31, 1992

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MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

2

1. **Designation and Nomenclature (Preferred Name):**
   STRATEGIC SEALIFT

2. **DoD Component:** Navy

3. **Responsible Office and Telephone Number:**

PMS 385 STRATEGIC SEALIFT PROGRAM	CAPT W. DAVID WHITMAN
NAVAL SEA SYSTEMS COMMAND	Assigned: June 26, 1992
2531 JEFFERSON DAVIS HWY	AV 332-2003/9127
ARLINGTON, VA 22242-5160	COMM 703-602-2003/9127

4. **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0604567N
   PROCUREMENT:
   APPN 1611 ICN 74D00000 (Navy)

   National Defense Sealift Fund account executed by the Naval Sea Systems Command under reimbursable procedures as directed by NAVCOMPT NOTICE 7000 NCB-33 of 9 Nov 92: Subj: NATIONAL DEFENSE SEALIFT FUND (NDSF).

5. **Related Programs:**
NONE

No Security Objection to Open Publication (AS AMENDED)
93-C-0434
MAY 26 1993
Office of the Chief of Naval Operations
Dept. of the Navy

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93-701

SEALIFT, December 31, 1992

6. **Mission and Description:**
To carry Army equipment for afloat prepositioning and to transport ARMY/USMC or other services surge equipment to include wheeled/tracked vehicles, helicopters and cargo from CONUS to contingency area.

7. **Program Highlights:**

a. Significant Historical Developments --
JCS Mobility Requirement Study (MRS) defined overall Strategic Sealift requirement. The Operational Requirements Document (ORD), and Mission Need Statement (MNS) were validated on 18 Jun 92 by the Joint Requirements Oversight Council (JROC) for the CSP/S-24 requirement. ORD was revised and approved by CNO on 14 Sept 92. NPDM held on 17 Aug 92. Permission was granted to proceed to Milestone I DAB. Conventional Systems Committee meeting was held on 2 Sep 92. Milestone I DAB review was postponed. The FY 1993 Defense Authorization Act established the National Defense Sealift Fund and transferred the previously appropriated $1.875B into NDSF. The FY 1993 Defense Appropriation Act provided $613M for NDSF. Program was designated ACAT IC by USD(A) on 5 Mar 93.

b. Significant Developments Since Last Report --
N/A. Initial Sar.

c. Changes Since As Of Date --
Expect Milestone I approval by ASN (RD&A) by May 93 due to program being designated ACAT IC in March 93. Milestone II has been split for Conversion and New Construction by ASN (RD&A). Class Standard Equipment (CSE) Contract awarded 29 March 1993.

8. **Threshold Breaches:**
There are currently no Nunn McCurdy unit cost breaches. The Acquisition Program Baseline (APB) has been prepared and submitted for ASN (RD&A) review and approval.

9. **Schedule:**

a. Milestones --	Planning Estimate	Approved Program	Current Estimate
NPDM	AUG 92	N/A	AUG 92
Milestone I	MAY 93	N/A	MAY 93
CSP/S-24 Conversion Engineering Design Award	OCT 92	N/A	OCT 92
CSP/S-24 New Construction Engineering Design Award	NOV 92	N/A	NOV 92

SEALIFT, December 31, 1992

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning Estimate	Approved Program	Current Estimate
Class Standard Equipment Contract Award	MAR 93	N/A	MAR 93
Milestone II Conversion	JUN 93	N/A	JUN 93
CSP/S-24 Conversion Contract Award	JUL 93	N/A	JUL 93
Milestone II New Construction	AUG 93	N/A	AUG 93
CSP/S-24 New Construction Contract Award	SEP 93	N/A	SEP 93
Conversion Acceptance Trials	NOV 94	N/A	NOV 94
OT&E For Conversion	MAY 95	N/A	MAY 95
Organic Support Capability (First Conversion Ship	NOV 95	N/A	NOV 95
New Construction Acceptance Trials	AUG 97	N/A	AUG 97
IOC (New Construction First Ship Delivery)	OCT 97	N/A	OCT 97
OT&E For New Construction	APR 98	N/A	APR 98
Milestone III (Total Program)	AUG 98	N/A	AUG 98
Organic Support Capability (First New Construction Ship)	AUG 98	N/A	AUG 98
FOC (New Construction Ships)	JAN 01	N/A	JAN 01
Service Depot Support (Total Program)	SEP 00	N/A	SEP 00

Schedule reflects the requirement to complete OPEVAL prior to conducting Milestone III. Conversion award schedule has been accelerated.

b. Previous Change Explanations -- N/A initial SAR

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
FY 94 President's Budget dated 8 Apr 93.

Approved Program: None.

10. **Performance Characteristics:**

a. Performance --	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
RO/RO CAPACITY				
Total Cargo: (After broken stow) (M sqft)				
PREPO	2	N/A / N/A		2
SURGE	3	N/A / N/A		3
Cargo capacity per ship (K sqft) (Usable before broken stow)				
New Construction				
SURGE	400	N/A / N/A		380
PREPO	350	N/A / N/A		300
Conversion				
SURGE	400	N/A / N/A		300
PREPO	350	N/A / N/A		225
Lift/Cargo Handling Capability				
Crane Sets	2	N/A / N/A		2
Stern Ramp	Slewing	N/A / N/A		Slewing
Side Port	2	N/A / N/A		2
Cargo Onload/Offload Times (hrs-not to exceed)				
Load at Pier	48	N/A / N/A		48
Offload at Pier	48	N/A / N/A		48
Sustained Speed (knots)	>24	N/A / N/A		24
Range (nm)	17,500	N/A / N/A		12,000
Ship Size Limitation	<PANAMAX	N/A / N/A		PANAMAX

b. Previous Change Explanations -- N/A initial SAR

c. Current Change Explanations -- None.

d. References --

Planning Estimate:
ORD validated by JROC on 18 Jun 92.

Approved Program: None.

SEALIFT, December 31, 1992

11. **Total Program Cost and Quantity** (Current Estimate in Millions of Dollars):

	Planning Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	39.9	0.0	39.9
Procurement	5049.0	0.0	5049.0
New Construction PREPO	(2574.0)		(2574.0)
New Construction SURGE	(1012.0)		(1012.0)
Conversion	(1463.0)		(1463.0)
Total Sailaway	(5049.0)		(5049.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	5088.9	0.0	5088.9
Escalation	1499.5	0.0	1499.5
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(1499.5)	(0.0)	(1499.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6588.4	0.0	6588.4
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	20	N/A	20
Total	20	N/A	20

c. Foreign Military Sales/International Cooperative Programs -- NONE

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
FY94 President's Budget dated 8 Apr 93.

Approved Program: None.

SEALIFT, December 31, 1992

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	6588.4	6588.3	6588.3
(2) Quantity	20	20	20
(3) Unit Cost	329.42	329.42	329.42
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	2463.5	2463.5	290.8
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	2463.5	2463.5	290.8
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	39.9	6548.5	0.0	6588.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	39.9	6548.5	-	6588.4

SEALIFT, December 31, 1992

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	39.9	5049.0	0.0	5088.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	39.9	5049.0	-	5088.9

None

b. Previous Change Explanations --

Procurement
Estimating: N/A. Initital SAR

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
RDT&E Subtotal	--	--

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
329.420	--	--	--	--	--	--	--	--	329.420

15. **Contract Information**: None.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 25.0% (2 yrs/8 yrs)

(2) Percent Program Cost Appropriated: 38.0% ($2503.4 / $6588.4)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	39.9	-	-	-	39.9
Procurement	2463.5	290.8	747.4	3046.8	6548.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2503.4	290.8	747.4	3046.8	6588.4

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1993	9			2059.3	2463.5	13.2		2.4
1994				229.6	290.8			2.4
1995	4		1463.0	572.1	747.4			2.3
1996	2			570.1	767.7			2.3
1997	2			539.1	747.4			2.2
1998	2		1012.0	547.3	769.9			2.2
1999	1		2574.0	531.5	761.8			2.2
Subtot	20		5049.0	5049.0	6548.5	13.2		
Navy	20		5049.0	5049.0	6548.5	13.2		
Appropriation: 0400 RDT&E, Defense Agencies								
1992				39.9	39.9	32.3		
Subtot				39.9	39.9	32.3		
DoD				39.9	39.9	32.3		
Grand Total	20		5049.0	5088.9	6588.4	45.5		

No end items under R&D.

17. **Production Rate Data:**

a. Production Baseline Rate

N/A for Pre-Milestone III Program

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		290.8		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		747.4		N/A	N/A
Procurement Qty		4		N/A	N/A
Proc. Unit Cost	N/A	186.850	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		3046.8		N/A	N/A

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

CSP-24. The CSP-24 is prepositioed with military cargo. In Prepositioning Mode, the ship will wait with cargo in the holds in a forward area until needed. The cargo hold environmental control system will be used to maintain the cargo holds within the required temperature and humidity range. The ship will be maintained in Full Operating Status (FOS). The ship will participate in occasional fleet exercises. Port facilities may or may not have services such as shore power and steam. For calculating fuel consumption, the ship will not be on shore services. For calculating fuel consumption, the CSP is in the summer environmental condition year around. The CSP-24 will operate 33 percent of the time underway and 67 percent of the time in port. While underway, 67 percent of the time the ship will operate at 15 knots and 33 percent of the time will operate at 24 knots.

18a. Operating and Support Costs (Cont'd):

CSS-24. The CSS-24 is maintained in Reduced Operating Status (ROS). In ROS, the CSS-24 will be maintained without cargo and can be activated within four days (ROS-4). Full crews will be kept on alert and a skeleton crew (approximately 9) will be aboard at all times. For calculating fuel consumption, the ship will be on shore services. For calculating fuel consumption, the CSS is in the summer environmental condition 50 percent of the in port and underway periods and in the winter environmental condition 50 percent of the in port and underway periods. The CSS-24 will operate 15 percent of the time underway and 85 percent of the time will be in port. While underway, 60 percent of the time will be at 15 knots and 40 percent of the time will be at 24 knots.

During a mobilization (such as, war, crisis, deploymet, or redeployment), the CSP-24 and CSS-24 will operate as point-to-point ships. They will transit at maximum attainable speed from port of embarkation to port of debarkation.

b. Costs -- (FY Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CSP-24 Ship	Avg Annual Cost Per CSS-24 Ship
Unit Mission Personnel	5983.0	1537.0
Unit Level Consumption	1872.0	1217.0
Depot Maintenance	1608.0	1260.0
Sustaining Investment	200.0	50.0
Sys & Inventory Mgmt Con	50.0	30.0
Indirect O&S	883.0	968.0
Total	10596.0	5062.0

c. Contractor Support Costs -- None.

To be provided in next SAR

A-26 SCAMP

92-053

*** UNCLASSIFIED *** OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SCAMP

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
   Single Channel Anti-Jam Manportable Terminal (SCAMP) - Block I

2. DoD Component: Army

   Joint Participants:
   Air Force, Joint Communications Support Element, Marine Corps

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3. Responsible Office and Telephone Number:
   Project Manager Milstar (Army)
   BLDG 909
   ATTN: SFAE-CM-MSA
   Fort Monmouth, NJ 07703-5508
   COL William F. Jaiss
   Assigned: May 8, 1992
   AV 992-5232 COMM 908-532-5232

4. Program Elements/Procurement Line Items:

   RDT&E:
   PE 0303142 (Shared) Project D386, D455 (Shared)
   PROCUREMENT:
   APPN 3080 ICN 33601F (Air Force) (Shared) *
   APPN 1810 ICN 33113N (Navy) (Shared) **
   APPN 1109 ICN 402700 (Navy) ***
   APPN 2035 ICN BC4003 (Army)

*33601F (Air Force) shares all Air Force Milstar terminal requirements.

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28 MAY 1993
[illegible], HQDA

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4. Program Elements/Procurement Line Items (Cont'd):

**The above highlighted ICN is for Joint Communications Support Element (JCSE) for the Quick Response Element (QRE) teams, using Navy appropriation.

*** ICN 402700 represents Marine Corps requirements.

5. Related Programs:
US Air Force Milstar Space and Mission Control Segment

6. Mission and Description:
This program is a new Milstar EHF single channel, half duplex satellite terminal to be employed by units that require range extension for command and control communications. The Block I terminal will be used by CINCs and other high priority users to transmit intelligence traffic, and receive command and control traffic from a base station. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. SCAMP will provide Low Data Rate (LDR) secure voice at 2400 bps and secure data at 75-2400 bps, as well as Low Probability of Interception/Low Probability of Detection (LPI/LPD). SCAMP is extremely robust and provides greater anti-jam protection. It will interface with Common Hardware/Software devices such as the Lightweight Computer Units and the Hand-Held Terminal Unit. A future Block II terminal will have a maximum 15 pound weight with the same operational capabilities.

7. Program Highlights:
a. Significant Historical Developments --
This program is part of the Milstar Advanced Satellite Terminal (MAST) Operational Requirements Document dated 10 March 1992. In the FY90 National Defense Authorization Act, Congress directed that the entire Milstar program be restructured to: substantially reduce costs; increase the utility for tactical users; and eliminate unnecessary capabilities for protracted nuclear warfighting missions and operations. This direction/guidance led to a number of actions for improving the AirLand Operations to include the need to develop and procure a new Single Channel Anti-jam ManPortable (SCAMP) Terminal. In a letter to Congress dated 29 January 1991, the Deputy Secretary of Defense outlined to Congress the DOD's plan to restructure the Milstar program. In conjunction with the staffing of the Army Operational Requirements Document (ORD) dated 10 Mar 1992, the Project Management Office (PMO) conducted industry briefings in June and September 1991. The Army Acquisition Executive (AAE) subsequently approved the Acquisition Strategy Report (ASR) on 8 April 1992. A successful ASARC Milestone II Decision was held on 18 May 1992, allowing the Block I program to proceed into Phase II,

7a. Program Highlights (Cont'd):

Engineering and Manufacturing Development (EMD). The Acquisition Decision Memorandum was signed on 22 May 92. The development proposals were received on 27 May 92. Two competitive contracts were awarded 17 September 92 to Lockheed Missiles and Space Company, Inc., Sunnyvale, CA. and GE Aerospace, Camden, NJ. A successful Milstar Defense Acquisition Board (DAB) Program Review was held on 27 October 1992. A Joint Operational Requirements Document (JORD) was approved on 4 September 1992. On 23 November 1992 it was announced that the Martin Marietta Corporation and the General Electric Company had reached a definitive agreement to merge GE's Aerospace businesses into Martin Marietta. This merger was approved by the stockholders on 25 March 1993 and became official on 2 April 1993. No change in way of doing business is expected during 1993.

This is the initial SAR for SCAMP.

The SCAMP system is expected to satisfy the mission requirement.

b. Significant Developments Since Last Report -- None.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There are currently no breaches to the Approved Acquisition Program Baseline (APB) dated 22 May 1992 or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I			
LDR Technology Demonstrated (SCOTT Terminal Acceptance)	DEC 91	DEC 91	DEC 91
Uplink and Downlink Acquisition Demo (via Lincoln Laboratory Prototype)	APR 92	APR 92	APR 92
Milestone II - Block I			
Milestone II ASARC Review	MAY 92	MAY 92	MAY 92
Development Contract Award	SEP 92	SEP 92	SEP 92
Preliminary Design Review Complete	SEP 93	SEP 93	MAR 93(Ch-1)
Critical Design Review Complete	MAR 94	MAR 94	MAR 94
Delivery of GT Units	FEB 95	FEB 95	FEB 95
Government Technical Test Start	FEB 95	FEB 95	FEB 95

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Complete	MAY 95	MAY 95	MAY 95
Delivery of OT Units	AUG 95	AUG 95	AUG 95
Operational Test			
Start	AUG 95	AUG 95	AUG 95
Complete	NOV 95	NOV 95	NOV 95
Delivery of RDGT Units	FEB 96	FEB 96	FEB 96
Milestone III			
Milestone III ASARC Review	FEB 96	FEB 96	FEB 96
Full Rate Production Award	MAR 96	MAR 96	MAR 96
First Production Delivery	OCT 97	OCT 97	OCT 97
Terminal IOC 1/	DEC 97	DEC 97	DEC 97

ACRONYMS:
GT - Government Test
IOC - Initial Operational Capability
LDR - Low Data Rate
OT - Operational Test
RDGT - Reliability Development Growth Test
SCOTT - Single Channel Objective Tactical Terminal

1/ Date by which initial training and provisioning have been completed.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) PDR dates were specified as contractor proposed in the contract. Both Lockheed and GE successfully completed PDR in March 1993.

d. References --

Development Estimate:
AAE Acquisition Program Baseline (APB) dated 22 May 92.
ASARC Milestone II Acquisition Decision Memorandum dated 26 May 92.

Approved Program:
AAE Approved Acquisition Program Baseline dated 22 May 1992.

10. **Performance Characteristics:**

a. Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Data Rate (bps)	75-2400	75-2400 / 75-2400	TBD	75-2400	
Set-up Time (min)	5	5 / 10	TBD	<7	(CH-1)
Tear-down Time (min)	5	5 / 10	TBD	5	
Voice Quality @ 2400 bps	>/= STU III	>/= STUIII / =STU III	TBD	>/= STU III	
Reliability MTBF 1/	1200	1200 / 900	TBD	1200	
Embedded COMSEC	Required	Required / Required	TBD	Required	
Battery Life (hrs)	24	24 / 12	TBD	13	(CH-2)
Area Common User Interface (bps) (data only)	75-2400	75-2400 / 75-2400	TBD	75-2400	
Weight (lbs)					
Block I	30	30 / 30	TBD	30	
Block II	12	12 / 15	TBD	12-15	(CH-3)

ACRONYMS:
bps - Bits Per Second
MTBF - Mean Time Between Failures
MTBOMF- Mean Time Between Operational Mission Failures
STU - Secure Telephone Unit

1/ 900 hours MTBF in order to support the users requirement of 600 hours MTBOMF.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) Specification requirement in the contract.

(Ch-2) Contractors' current estimate - at worst case temperature.

(CH-3) As stated in the Milstar Advanced Satellite Terminal (MAST) Operational Requirements Document (ORD) dated 12 March 1992. This clarifies the development estimate which should have read 12 to 15 pounds.

d. References --

Development Estimate:
AAE Acquisition Program Baseline (APB) dated 22 May 92.
ASARC Milestone II ADM Approval dated 26 May 92.

10d. Performance Characteristics (Cont'd):

Approved Program:
AAE Approved Acquisition Program Baseline dated 22 May 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	153.7	153.7	134.3
Procurement	163.5	163.5	159.7
Recurring Rollaway	(116.5)		(99.7)
Other Rollaway	(21.2)		(19.9)
Total Rollaway	(137.7)		(119.6)
Support Costs	(2.5)		(2.5)
Other System Costs	(12.0)		(19.2)
Total Other Wpn Sys	(14.5)		(21.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(11.3)		(18.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	317.2	317.2	294.0
Escalation	55.3	55.3	35.9
Development (RDT&E)	(14.0)	(14.0)	(9.0)
Procurement	(41.3)	(41.3)	(26.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	372.5	372.5	329.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	456	456	456
Total	456	456	456

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
Approved Acquisition Program Baseline dated 22 May 92.
ASARC Acquisition Decision Memorandum dated 26 May 92.

Approved Program:
AAE Approved Acquisition Program Baseline dated 22 May 1992.

11e. **Total Program Cost and Quantity (Cont'd):**

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	329.9	329.9	329.9
(2) Quantity	456	456	456
(3) Unit Cost	0.723	0.723	0.723
b. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	167.7	204.8	0.0	372.5
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-3.8	-14.6	-	-18.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-20.6	-19.6	-	-40.2
Other	-	-	-	-
Support	-	+16.0	-	+16.0
Subtotal	-24.4	-18.2	-	-42.6
Total Changes	-24.4	-18.2	-	-42.6
Current Estimate	143.3	186.6	-	329.9

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	153.7	163.5	0.0	317.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-19.4	-18.1	-	-37.5
Other	-	-	-	-
Support	-	+14.3	-	+14.3
Subtotal	-19.4	-3.8	-	-23.2
Total Changes	-19.4	-3.8	-	-23.2
Current Estimate	134.3	159.7	-	294.0

b. Previous Change Explanations --

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Mar 93 economic escalation rates. (Economic)	N/A	-3.8
FY92 funds turned in (reprogramming action) due to delay in development contract award. (Estimating)	-0.6	-0.8

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
FY93 funding reduction affecting the Block II effort. (Estimating)	-6.8	-7.3
Refinement of the Baseline Cost Estimate (BCE). (Estimating)	+0.9	+1.3
FY94-FY97 funding reductions. (Estimating)	-12.9	-13.8
RDT&E Subtotal	-19.4	-24.4
(2) Procurement		
Revised Mar 93 economic escalation rates. (Economic)	N/A	-14.6
Revised Initial Spares and Other Weapon Systems Cost. (Support)	+14.3	+16.0
FY 94-95 funding reduction. (Estimating)	-0.3	-0.5
Revised Marine Corp funding. (Estimating)	-0.2	-0.2
Reduction in first unit costs estimate. (Estimating)	-17.6	-18.9
Procurement Subtotal	-3.8	-18.2

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.817	-0.040	-0.001	--	--	-0.088	--	0.035	-0.094	0.723

15. Contract Information (Then-Year Dollars in Millions):

This is the first time the dual development contracts will appear in the SAR.

15. Contract Information (Cont'd):

a. RDT&E --

SCAMP-BLOCK I (LOCKHEED):	Initial Contract Price Target	Ceiling	Qty
Lockheed Corporation, Sunnyvale, CA DAAB07-92-C-B753, CPIF Award: September 17, 1992 Definitized: N/A	$25.9	N/A	15

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$25.9	N/A	15	$25.9	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Contract performance data and the Program Manager's Estimated Price at Completion have not been included. This information is procurement sensitive due to the competitive nature of the acquisition (i.e. two competitive contracts leading to a Production downselect).

SCAMP-BLOCK I (GE):	Initial Contract Price Target	Ceiling	Qty
General Electric Co., Camden, NJ DAAB07-92-C-B754, CPIF Award: September 17, 1992 Definitized: N/A	$28.0	N/A	15

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$28.0	N/A	15	$28.0	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Contract performance data and the Program Manager's Estimated Price at Completion have not been included. This information is procurement sensitive due to the competitive nature of the acquisition (i.e. two competitive contracts leading to a Production downselect).

SCAMP, December 31, 1992

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 30.0% (3 yrs/10 yrs)

(2) Percent Program Cost Appropriated: 15.5% ($51.2 / $329.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	51.2	35.2	43.6	13.3	143.3
Procurement	-	-	2.9	183.7	186.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	51.2	35.2	46.5	197.0	329.9

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: RDT&E - All Sources								
1991				3.6	3.6	3.6	3.6	4.3
1992				24.0	24.5	24.5	13.1	2.8
1993				22.1	23.1	21.2	2.7	2.4
1994				33.0	35.2			2.4
1995				39.9	43.6			2.3
1996				8.1	9.0			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: RDT&E - All Sources (Cont'd)								
1997				1.0	1.1			2.2
1998								2.2
1999								2.2
2000				2.6	3.2			2.2
Subtot				134.3	143.3	49.3	19.4	
Appropriation: Procurement - All Sources								
1995				2.6	2.9			2.3
1996	287	18.3	54.4	74.7	85.3			2.3
1997	133	1.0	25.8	37.6	43.8			2.2
1998	2	0.1	4.8	20.6	24.6			2.2
1999				4.5	5.5			2.2
2000	34	0.5	14.7	19.7	24.5			
Subtot	456	19.9	99.7	159.7	186.6			
Appropriation: MILCON - All Sources - None.								

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: O&M - All Sources - None.								
Total	456	19.9	99.7	294.0	329.9	49.3	19.4	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1991				3.6	3.6	3.6	3.6	4.3
1992				24.0	24.5	24.5	13.1	2.8
1993				22.1	23.1	21.2	2.7	2.4
1994				33.0	35.2			2.4
1995				39.9	43.6			2.3
1996				8.1	9.0			2.3
1997				1.0	1.1			2.2
1998								2.2
1999								2.2
2000				2.6	3.2			2.2
Subtot				134.3	143.3	49.3	19.4	

Expenditures and obligations reflect program office records as of 5 May 1993.

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army								
1995				2.5	2.8			2.3
1996	150	17.5	30.7	42.9	49.0			2.3
1997				3.7	4.3			2.2
1998				15.5	18.5			2.2
1999				4.4	5.4			2.2
2000				1.0	1.2			
Subtot	150	17.5	30.7	70.0	81.2			
Army	150	17.5	30.7	204.3	224.5	49.3	19.4	
Appropriation: 1109 Procurement, Marine Corps								
1996	7		1.5	1.9	2.2			2.3
1997	23	0.1	4.7	6.1	7.1			2.2
1998	2	0.1	4.8	5.1	6.1			2.2
1999				0.1	0.1			2.2
2000	34	0.5	14.7	18.7	23.3			2.2
Subtot	66	0.7	25.7	31.9	38.8			

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy								
1996	4		0.7	1.0	1.1			2.3
1997	4		0.8	1.0	1.2			2.3
Subtot	8		1.5	2.0	2.3			
Navy	74	0.7	27.2	33.9	41.1			

This Navy appropriation has been designated to fund the JCSE requirements.

Appropriation: 3080 Other Procurement, Air Force								
1995				0.1	0.1			2.3
1996	126	0.8	21.5	28.9	33.0			2.3
1997	106	0.9	20.3	26.8	31.2			2.2
Subtot	232	1.7	41.8	55.8	64.3			
USAF	232	1.7	41.8	55.8	64.3			
Grand Total	456	19.9	99.7	294.0	329.9	49.3	19.4	

17. **Production Rate Data:**

a. Production Baseline Rate

This program is pre-Milestone III and no full-rate production baseline has been determined.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	2.9	2.9	2.9	0.0	0.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	186.6	183.7	186.6	+2.9	+2.9

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

The conditions under which SCAMP maintenance costs are calculated include using the annual maintenance man hours at the direct level, which is estimated to be 10 hours per system. The Cost Analysis Requirements Document (CARD) and the Operational Requirements Document (ORD) reference a Mean Time Between Failure of 1200 hours and Mean Time Between Operational Mission Failure of 600 hours for the Block I SCAMP. Based on an 8760 hours per year use, the annual number of failures per year is 146. A total of 40 minutes is estimated to maintain each failure per system.

Depot labor costs were developed by using an estimated 20 hours per system per year. This was calculated against a loaded labor rate of

18a. Operating and Support Costs (Cont'd):

$45 per hour according to Tobyhanna Army Depot and quantity of units per year. Depot material was developed using the Army OMA & OPA Cost Factor Handbook which states that labor represents approximately 60% and material 40% of depot maintenance costs.

Note that there is no antecedent system.

b. Costs -- (FY Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per SCAMP	Avg Annual Cost Per Terminal(Antecedent)
Personnel	0.1	N/A
Total Spares Cost	7.4	N/A
Other O&S Costs	7.5	N/A
Total	15.0	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O & M	---	---	---	3.2	3.2
Industrial Fund	---	---	---	---	---
Total	---	---	---	3.2	3.2

92-058

A-28 SMART-T

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OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: SMART-T

AS OF DATE: December 31, 1992

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1. **Designation and Nomenclature (Preferred Name):**
   Secure Mobile Anti-Jam Reliable Tactical Terminal

2. **DoD Component:** Army

   Joint Participants:
   U.S. Air Force, U.S. Marine Corps, U.S. Navy, Joint Communications Support Element, Other DoD Special Users

3. **Responsible Office and Telephone Number:**
   Project Manager Milstar (Army) — COL William F. Jaissle
   PEO Communications Systems — Assigned: May 8, 1992
   ATTN: SFAE-CM-MSA — AV 992-5232 COMM 908-532-5232
   Fort Monmouth, NJ 07703-5508

CLEARED
FOR OPEN PUBLICATION

MAY 28 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

5

4. **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0303142 (Shared) *SEE MEMO
   Project D384, D455 (Shared)
   PROCUREMENT:
   APPN 0300 ICN 1130453BB (DCA/DNA) (Shared) NAVY SPECIAL FORCES
   APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy
   APPN 2035 ICN 28612A (Army) (Shared) **
   APPN 2035 ICN BC4002 (Army)
   APPN 3080 ICN 21131F (Air Force) (Shared) **
   APPN 3080 ICN 33601F (Air Force) (Shared) ***

No SECURITY Objection to PUBLIC RELEASE
28 MAY 1993
George Brownell
SECURITY STAFF

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OASD(PA) DFOISR 93-C-734

4. Program Elements/Procurement Line Items (Cont'd):

*SMART-T FY92 and FY93 R&D funds were part of Project D455, which reflected funding for the four Army Milstar programs. In FY94, SMART-T will be funded under Project D384.

**The Joint Communications Support Element (JCSE) requirements are funded with Army and Air Force funds managed by JCSE. The funding for Other DoD Special Users as identified in the out years under this appropriation needs to be addressed during the upcoming FY 93 Program Objective Memoradum (POM) process.

***Air Force ICN 33601F (shared) funds all Air Force Milstar terminal requirements.

5. Related Programs:
Milstar Space and Mission Control Segment Program; M1037 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV)

6. Mission and Description:
This program responds to the Congressional direction to increase the tactical utility of the Milstar System. The SMART-T will provide a range extension capability to the Army's Mobile Subscriber Equipment (MSE). Specifically, it will provide a satellite interface to permit uninterrupted voice/data communication as our advancing forces move beyond the line-of-sight capability of MSE. This program will support Echelons Corps and Below (ECB) as well as special contingency operations. This equipment will communicate at both low and medium data rates. It will provide the security, mobility, and anti-jam capability required to defeat the threat and satisfy the critical need stated above. The SMART-T also will have the inherent capability of low probability of interception and low probability of detection (LPI/LPD) to avoid being targeted for destruction, jamming or eavesdropping. The prime mover will be a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) which will carry all the electronics, power generation and a self-erectable antenna. Feasibility engineering efforts will be conducted as part of the development program for Demand Assigned Multiple Access (DAMA) capability. The SMART-T program does not replace another; however, it does operationally displace the AN/TSC-85s and 93s (Ground Mobile Forces SHF terminals) at ECB. (The GMF displaced terminals will move to support Echelons Above Corps).

7. Program Highlights:
a. Significant Historical Developments --
In the National Defense Authorization Act for FY90, Congress directed that the entire Milstar program be restructured to: substantially reduce costs; increase the utility for tactical users; and eliminate unnecessary capabilities for protracted nuclear war fighting missions

7a. Program Highlights (Cont'd):

and operations. This direction/guidance led to a number of actions for improving the Airland Operations to include the need to develop and procure a new Medium Data Rate (MDR) Secure, Mobile, Anti-jam, Reliable, Tactical Terminal (SMART-T). In a letter to Congress dated 29 January 1991, the Deputy Secretary of Defense outlined to Congress the DoD's plan to restructure the Milstar program, which included acquisition plans for the SMART-T. In conjunction with the staffing of the Army Operational Requirements Document (ORD) dated 10 March 1992, the Project Management Office conducted an industry briefing (September 1991). The Army Acquisition Executive (AAE) approved the Acquisition Strategy Report on 8 April 1992. A successful ASARC Milestone II Decision was held on 18 May 1992, allowing the program to proceed into Phase II, Engineering and Manufacturing Development (EMD). The Acquisition Decision Memorandum was signed on 22 May 1992. Subsequently on 27 October 1992, a Milstar Program Review DAB was conducted, which revalidated the ground terminal program requirements. Dual development contracts were awarded on 9 November 1992 to Raytheon Co., Marlborough, MA and Rockwell International, Richardson, TX.

This is the initial SAR for SMART-T.

The SMART-T system is expected to satisfy the mission requirement.

b. Significant Developments Since Last Report -- None.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:
There are currently no breaches to the approved Acquisition Program Baseline (APB) dated 22 May 11992 or Nunn-McCurdy Unit Cost Breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
MDR Study	FEB 91	FEB 91	FEB 91
Market Survey	SEP 91	SEP 91	SEP 91
LDR Technology Demonstrated (SCOTT Terminal Acceptance)	DEC 91	DEC 91	DEC 91
Milestone II ASARC Review	MAY 92	MAY 92	MAY 92
Development Contract Award	SEP 92	SEP 92	NOV 92(Ch-1)
Preliminary Design Review	JUL 93	JUL 93	MAY 93(Ch-1)

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Critical Design Review	MAR 94	MAR 94	DEC 93(Ch-1)
DT&E			
Start	JAN 95	JAN 95	SEP 94(Ch-1)
Complete	OCT 95	OCT 95	DEC 95(Ch-1)
EDM Deliveries	NOV 95	NOV 95	FEB 96(Ch-1)
LRIP Decision	DEC 95	DEC 95	FEB 96(Ch-1)
Low Rate Production Contract Award	JAN 96	JAN 96	MAR 96(Ch-1)
FAT			
Start	AUG 97	AUG 97	OCT 97(Ch-1)
Complete	JAN 98	JAN 98	MAR 98(Ch-1)
LRIP First Delivery	JAN 98	JAN 98	MAR 98(Ch-1)
LDR IOT&E			
Start	FEB 98	FEB 98	APR 98(Ch-1)
Complete	MAY 98	MAY 98	JUL 98(Ch-1)
Milestone III ASARC Review	SEP 98	SEP 98	OCT 98(Ch-1)
Full Scale Production Award	NOV 98	NOV 98	NOV 98
MDR FOT&E			
Start	SEP 99	SEP 99	SEP 99
Complete	NOV 99	NOV 99	NOV 99
Terminal IOC 1/	DEC 99	DEC 99	DEC 99

ACRONYMS:
- ASARC - Army Systems Acquisition Review Council
- LDR - Low Data Rate
- MDR - Medium Data Rate
- SCOTT - Single Channel Objective Tactical Terminal
- DT&E - Development Test and Evaluation
- EDM - Engineering Development Model
- LRIP - Low Rate Initial Production
- FAT - First Article Test
- IOT&E - Initial Operational Test and Evaluation
- FOT&E - Follow-On Test and Evaluation
- IOC - Initial Operational Capability

1/ Date when initial training and provisioning have been completed.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) The Development Contracts were awarded in Nov 92 (vs Sep 92). This delay was due to the additional time required to complete source selection evaluation. The delay caused a

9c. **Schedule (Cont'd):**
shift in all subsequent milestones thru Milestone III ASARC Review.

d. References --

Development Estimate:
AAE Acquisition Program Baseline dated 22 May 1992.
ASARC ADM Approval for Milestone II dated 26 May 1992.

Approved Program:
AAE Approved Acquisition Program Baseline dated 22 May 1992.

10. **Performance Characteristics:**

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Set-up Benign Environment (min)	30	30	/ 30	TBD	30
Set-up MOPP 4 Gear (min)	45	45	/ 45	TBD	45
Tear-down Benign Environment (min)	30	30	/ 30	TBD	30
Tear-down MOPP 4 Gear (min)	45	45	/ 45	TBD	45
MTBF (hrs) (80%LCL)/ (Point estimate)	800	800	/ 400	TBD	800/1
Aggregate Data Rate (kbps)	1544	1544	/ 1024	TBD	1544
Interface Capability	With MSE	With MSE	/ With MSE	TBD	With MSE
Configuration (Full System)	HMMWV	HMMWV	/ HMMWV	TBD	HMMWV
System Weight NTE(lbs) (Integrated on HMMWV)	3177	3177	/ 3177	TBD	3177
TRANSEC with Over the Air Rekey Capability	Required	Required	/ Required	TBD	Required
Bit Error Rate (BER)	10 ^-5	10 ^-5	/ 10 ^-3	TBD	10 ^-5
Airlift Transportability					
System Only (By)	UH-60	UH-60	/ UH-60	TBD	UH-60
System and HMMWV (By)	CH-47	CH-47	/ CH-47	TBD	CH-47
Power Sources					
Prime (VDC)	28	28	/ 28	TBD	28
Alternate AC Power (VAC) @ 50-60 Hz	110-220	110-220	/ 110-220	TBD	110-220

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Back-up (Vehicular) (Volts)	20-30	20-30 / 20-30	TBD	20-30

ACRONYMS:

HMMWV	- High Mobility Multi-Purpose Wheeled Vehicle
LCL	- Lower Confidence Level
min	- Minutes
MOPP	- Mission Oriented Protective Posture
MSE	- Mobile Subscriber Equipment
MTBF	- Mean Time Between Failure
NTE	- Not To Exceed
TRANSEC	- Transmission Security

/1 MTBF: A phased approach was approved to achieve the objective MTBF at FOT&E (i.e., 140 hours [point estimate] MTBF by end of development contract, 400 hours [point estimate] MTBF by end of LRIP, and 800 hours MTBF [80% LCL] at FOT&E).

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
AAE Acquisition Program Baseline dated 22 May 1992.
ASARC ADM Approval for Milestone II dated 26 May 1992.

Approved Program:
AAE Approved Acquisition Program Baseline dated 22 May 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	206.2	206.2	158.6
Procurement	598.2	598.2	606.7
Recurring Rollaway	(397.1)		(363.6)
Other Rollaway	(119.7)		(118.7)
Total Rollaway	(516.8)		(482.3)
Support Cost	(1.9)		(1.9)
Other System Cost	(30.2)		(42.4)
Total Other Wpn Sys	(32.1)		(44.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(49.3)		(80.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	804.4	804.4	765.3
Escalation	222.8	222.8	144.2
Development (RDT&E)	(19.2)	(19.2)	(10.1)
Procurement	(203.6)	(203.6)	(134.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1027.2	1027.2	909.5

RDT&E includes funding for Demand Assigned Multiple Access (DAMA) Feasibility Engineering Efforts to be performed.

b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	364	364	366
Total	364	364	366

CURRENT SMART-T QUANTITIES

	TOTAL
ARMY	208
AIR FORCE	97
MARINE CORPS	42
JCSE	10
NAVY	4
OTHER DoD	5
SPECIAL USERS	
TOTAL	366

JCSE funded requirements increased by two per the 4 Sep 92 Milstar Joint Operational Requirements Document (JORD).

11c. **Total Program Cost and Quantity (Cont'd):**

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
AAE Acquisition Program Baseline dated 22 May 1992.
ASARC ADM Approval for Milestone II dated 26 May 1992.

Approved Program:
AAE Approved Acquisition Program Baseline dated 22 May 1992.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	909.5	909.5	909.5
(2) Quantity	366	366	366
(3) Unit Cost	2.485	2.485	2.485
b. Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	225.4	801.8	0.0	1027.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-4.4	-74.4	-	-78.8
Quantity	-	+2.8	-	+2.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-52.3	-42.0	-	-94.3
Other	-	-	-	-
Support	-	+52.6	-	+52.6
Subtotal	-56.7	-61.0	-	-117.7
Total Changes	-56.7	-61.0	-	-117.7
Current Estimate	168.7	740.8	-	909.5

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	206.2	598.2	0.0	804.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	+2.2	-	+2.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-47.6	-36.7	-	-84.3
Other	-	-	-	-
Support	-	+43.0	-	+43.0
Subtotal	-47.6	+8.5	-	-39.1
Total Changes	-47.6	+8.5	-	-39.1
Current Estimate	158.6	606.7	-	765.3

b. Previous Change Explanations --

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Mar 93 economic escalation rates. (Economic)	N/A	-4.4
FY92 funds turned in (reprogramming action) due to delay in development contract award. (Estimating)	-5.0	-5.2

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Funding reduction to accommodate Small Business Innovative Research (SBIR) allocation. (Estimating)	-0.2	-0.2
FY93-95 funding reductions. (Estimating)	-36.4	-40.5
Funding reduction to accommodate Inflation Tax allocation. (Estimating)	-3.8	-4.0
FY93 unfunded Demand Assigned Multiple Access (DAMA) engineering feasibility effort. (Estimating)	-2.2	-2.4
RDT&E Subtotal	-47.6	-56.7
(2) Procurement		
Revised Mar 93 economic escalation rates. (Economic)	N/A	-74.4
Increase in JCSE funded requirements (+2 terminals). (Quantity)	+2.2	+2.8
Revised Initial Spares and Other Weapons System Costs. (Support)	+43.0	+52.6
FY94-95 funding reduction. (Estimating)	-1.7	-2.0
Reduction in first unit cost estimate. (Estimating)	-35.0	-40.0
Procurement Subtotal	+8.5	-61.0

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.822	-0.215	-0.008	--	--	-0.258	--	0.144	-0.337	2.485

15. **Contract Information** (Then-Year Dollars in Millions):

This is the first time the dual development contracts will appear in the SAR.

a. RDT&E --

SMART-T DEV (Raytheon):	Initial Contract Price Target	Ceiling	Qty
Raytheon, Marlborough, MA DAAB07-93-C-B751, CPIF W/T&M Award: November 9, 1992 Definitized: N/A	$35.6	N/A	6

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$35.6	N/A	6	$35.6	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Contract performance data and the PM's estimate for the contract completion have been omitted. This information is procurement sensitive due to the competitive nature of the acquisition strategy (i.e., dual development contractors to compete for LRIP/Production contract).

SMART-T DEV (Rockwell):	Initial Contract Price Target	Ceiling	Qty
Rockwell Intl. Corp., Richardson, TX DAAB07-93-C-B752, CPIF W/T&M Award: November 9, 1992 Definitized: N/A	$47.7	N/A	6

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$47.7	N/A	6	$47.7	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

Contract performance data and the PM's estimate for the contract completion have been omitted. This information is procurement

15. **Contract Information (Cont'd):**
sensitive due to the competitive nature of the acquisition strategy (i.e., dual development contractors to compete for LRIP/Production contract).

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 6.7% (2 yrs/30 yrs)

(2) Percent Program Cost Appropriated: 7.1% ($64.3 / $909.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2021)	Total
RDT&E	64.3	56.1	45.8	2.5	168.7
Procurement	-	-	-	740.8	740.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	64.3	56.1	45.8	743.3	909.5

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: RDT&E - All Sources								
1992				19.6	20.0	20.0	13.0	2.8
1993				42.4	44.3	42.8	4.5	2.4
1994				52.5	56.1			2.4
1995				41.9	45.8			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: RDT&E - All Sources (Cont'd)								
1996				2.2	2.5			2.3
Subtot				158.6	168.7	62.8	17.5	
Appropriation: Procurement - All Sources								
1996	22	18.1	35.1	64.2	73.2			2.3
1997	54	17.0	58.6	86.8	101.3			2.2
1998	92	21.4	86.2	135.8	161.8			2.2
1999	61	22.1	53.9	94.6	115.3			2.2
2000	137	40.1	129.8	158.6	197.4			2.2
2001				22.7	28.9			2.2
2002				19.2	24.9			2.2
2003				5.7	7.5			2.2
2004				3.3	4.5			2.2
2005				2.5	3.5			2.2
2006				1.1	1.6			2.2
2007				0.9	1.3			2.2
2008				0.9	1.4			2.2
2009				0.9	1.4			2.2

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: Procurement - All Sources (Cont'd)								
2010				0.9	1.4			2.2
2011				0.9	1.5			2.2
2012				0.9	1.5			2.2
2013				0.9	1.5			2.2
2014				0.9	1.6			2.2
2015				0.9	1.6			2.2
2016				0.9	1.6			2.2
2017				0.9	1.7			2.2
2018				0.8	1.5			2.2
2019				0.7	1.3			2.2
2020				0.5	1.0			2.2
2021				0.3	0.6			2.2
Subtot	366	118.7	363.6	606.7	740.8			
Appropriation: MILCON - All Sources - None.								
Appropriation: O&M - All Sources - None.								
Total	366	118.7	363.6	765.3	909.5	62.8	17.5	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1992				19.6	20.0	20.0	13.0	2.8
1993				42.4	44.3	42.8	4.5	2.4
1994				52.5	56.1			2.4
1995				41.9	45.8			2.3
1996				2.2	2.5			2.3
Subtot				158.6	168.7	62.8	17.5	

Expenditures and obligations reflect Program Office records as of 5 May 1993.

Appropriation: 2035 Other Procurement, Army

1996	21	18.0	33.5	61.7	70.4			2.3
1997	33	15.0	36.6	56.9	66.4			2.2
1998	39	17.1	38.2	70.0	83.4			2.2
1999	55	21.6	48.6	87.5	106.6			2.2
2000	70	34.8	77.7	86.3	107.4			2.2
2001				22.3	28.4			2.2
2002				19.1	24.8			2.2
2003				5.1	6.8			2.2

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
2004				3.3	4.5			2.2
2005				2.5	3.5			2.2
2006				1.1	1.6			2.2
2007				0.9	1.3			2.2
2008				0.9	1.4			2.2
2009				0.9	1.4			2.2
2010				0.9	1.4			2.2
2011				0.9	1.5			2.2
2012				0.9	1.5			2.2
2013				0.9	1.5			2.2
2014				0.9	1.6			2.2
2015				0.9	1.6			2.2
2016				0.9	1.6			2.2
2017				0.9	1.7			2.2
2018				0.8	1.5			2.2
2019				0.7	1.3			2.2
2020				0.5	1.0			2.2
2021				0.3	0.6			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
Subtot	218	106.5	234.6	428.0	524.7			
Army	218	106.5	234.6	586.6	693.4	62.8	17.5	

The 2035 appropriation funds the U.S. Army (208), Other DOD Special Users (5), and half of the JCSE requirements (5).

Appropriation: 1109 Procurement, Marine Corps

2000	42	3.1	32.6	45.2	56.3			2.2
2001								2.2
2002								2.2
2003				0.4	0.5			2.2
Subtot	42	3.1	32.6	45.6	56.8			
Navy	42	3.1	32.6	45.6	56.8			

The 1109 appropriation funds the U.S. Marine Corps requirements (42).

Appropriation: 3080 Other Procurement, Air Force

1996	1	0.1	1.6	2.5	2.8			2.3
1997	21	2.0	22.0	29.9	34.9			2.2
1998	53	4.3	48.0	65.8	78.4			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
1999	6	0.5	5.3	7.1	8.7			2.2
2000	21	1.9	16.4	22.8	28.4			2.2
2001				0.4	0.5			2.2
2002				0.1	0.1			2.2
2003				0.2	0.2			2.2
Subtot	102	8.8	93.3	128.8	154.0			
USAF	102	8.8	93.3	128.8	154.0			

The 3080 appropriation funds the requirements for the U.S. Air Force (97) and the remaining half of the JCSE requirement (5).

Appropriation: 0300 Procurement, Defense Agencies

2000	4	0.3	3.1	4.3	5.3			2.2
Subtot	4	0.3	3.1	4.3	5.3			
DoD	4	0.3	3.1	4.3	5.3			
Grand Total	366	118.7	363.6	765.3	909.5	62.8	17.5	

The 0300 appropriation funds the requirements for U.S. Navy Special Forces (4).

17. **Production Rate Data:**

a. Production Baseline Rate

This program is pre-Milestone III and no full-rate production baseline has been determined.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	740.8	740.8	740.8	0.0	0.0

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

The conditions under which the SMART-T maintenance costs are calculated include using the annual operating hours per terminal of 2080 hours based on an 8 hour a day 5 day week per operation. Each terminal will require 60 man hours/year of DS/GS maintenance, and 120 man hours/year of Service Repairable Area (SRA). Each complete terminal will be overhauled at depot once during its lifetime. This effort will require 240 man hours of effort.

Note that there is no antecedent system.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY Cost Constant (Base-Year) Dollars in Thousands)

Cost Element	Average Annual SMART-T	Avg Annual Cost Per Terminal(Antecedent)
Personnel	36.5	N/A
Replenishment Spares	19.7	N/A
Replen Repair Parts	19.8	N/A
Software	6.6	N/A
Other O&S Costs	6.7	N/A
Total	89.3	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O & M	---	---	---	8.5	8.5
Industrial Fund	---	---	---	---	---
Total	---	---	---	8.5	8.5

AF-18 JSIPS

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93-096

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JSIPS

AS OF DATE: December 31, 1992

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FOR OPEN PUBLICATION

MAY 18 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. **Designation and Nomenclature (Preferred Name):**
Joint Service Imagery Processing System

2. **DoD Component:** USAF

Joint Participants:
USMC, Army, and Navy

3. **Responsible Office and Telephone Number:**

Electronic Systems Center/ICI
Hanscom AFB
Bedford, MA 01731-5000
COMM 617-271-8048

Mr Richard Bleau
Assigned: December 1, 1992
AV 478-5980 ext 8048

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0206625M
PE 0207217F Project 3652
PE 0603261N, 0603730A
PROCUREMENT:
APPN 1109 ICN 461500 (Navy)
APPN 1810 ICN 461500 (Navy)
APPN 2035 ICN BZ7320 (Army)
APPN 3080 ICN 456GC3453 (Air Force) Shared

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5. Related Programs:
Mission Verification System (MVS); A unit level ATARS Imagery Ground System. Eagle Vision; Multi spectral Imagery Ground Station.

6. Mission and Description:
JSIPS mission is to provide imagery-derived, time-sensitive, battle management information to the field commanders in near-real-time. JSIPS is the DOD common mobile ground station for processing and exploiting imagery received from a variety of sources. The system employs the following seven functional segments: National Input Segment (NIS), Tactical Input Segment (TIS), Softcopy Exploitation Support Segment (SES), Hardcopy Exploitation Segment (HES), Exploitation Support Segment (ESS), Communication Support Segment (CSS), and System Support Segment (SSS). The SES, ESS and CSS are "Core" segments required for basic system operation. The system, however, is modular in design so that the services (USAF, USMC, USA, and USN) can select the input and processing segments that they require based upon their mission.

7. Program Highlights:
a. Significant Historical Developments --
The Army system was deployed to Mainz-Finthen, Germany (October 1990). The system was approved for Softcopy operations in October 1991. Approval for Tactical Radar Correlator (TRAC), ELINT Processing Distribution System (EPDS), and Hardcopy Exploitation Segment (HES) operations was granted in October 1992.

The Air Force/Marine Corp system was deployed to Eglin AFB in July of 1992 for developmental testing. A successful ATARS Data Link flight test was conducted in September of 1992.

Performance characteristics are currently under review and are subject to final coordination of all users. JSIPS was designated as an ACAT IC program in July 1992.

b. Significant Developments Since Last Report --
The JSIPS program is expected to satisfy all mission requirements. This is an initial SAR.

c. Changes Since As Of Date --
On 11 February 1993, the Defense Intelligence Agency granted full approval to operate all JSIPS functions on the Army system deployed at Mainz-Finthen, Germany.

On 19 February 1993, the Air Force System Acquisition Review Council (AFSARC) authorized the beginning of Low Rate Initial Production (LRIP) to buy the first Air Force production system.

8. Threshold Breaches:
There is currently no approved DAE acquisition program baseline (APB); there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development Estimate	Approved Program	Current Estimate
LRIP System Decision	APR 93	N/A	APR 93
LRIP Contract Award	AUG 93	N/A	AUG 93
Army System Production	JAN 94	N/A	JAN 94
USMC Full Rate Decision	AUG 94	N/A	AUG 94
LRIP System Delivery	OCT 95	N/A	OCT 95
Navy Subsystem Production	JAN 96	N/A	JAN 96
AF Full Rate Decision	JUL 96	N/A	JUL 96

b. Previous Change Explanations -- None. This is an initial SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
FY94 Amended President's Budget dated 8 April 1993.

Approved Program: None.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Imagery Receipt - Simultaneously receive, process, and store national imagery (images per 24 hours)	120	N/A / N/A	TBD	120
Reliability, Maintainability (% operational availability)	95	N/A / N/A	TBD	95
Mobility/Deployability - Modular,segmentable, and transportable	Yes	N/A / N/A	TBD	Yes

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Energy Management - Compatible with both commercial and organic power.	Yes	N/A / N/A	TBD	Yes

b. Previous Change Explanations --

None. There are no previous changes since this is an initial SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
FY94 Amended President's Budget dated 8 April 1993.

Approved Program: None.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	322.0	0.0	322.0
Procurement	264.3	0.0	264.3
PM/SEPM/ST&E	(162.6)		(162.6)
TRNG/DATA/OPSITE/WARRANTY	(68.6)		(68.6)
Peculiar Support	(15.5)		(15.5)
Initial Spares	(17.6)		(17.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 86 Base-Year $	586.3	0.0	586.3
Escalation	176.3	0.0	176.3
Development (RDT&E)	(68.6)	(0.0)	(68.6)
Procurement	(107.7)	(0.0)	(107.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	762.6	0.0	762.6

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	3	N/A	3
Procurement	9	N/A	9
Total	12	N/A	12

Excludes US Navy acquisition of 15 non-fully configured end items. Each service procurement of a JSIPS is configured slightly different; therefore, each has a slightly different cost. The approved Low Rate Initial Production (LRIP) quantity was one (1).

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
FY94 Amended President's Budget dated 8 April 1993.

Approved Program: None.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	762.6	762.6	762.6
(2) Quantity	12	12	12
(3) Unit Cost	63.550	63.550	63.550
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	16.2	16.2	9.5
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	16.2	16.2	9.5
(2) Quantity			
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	390.6	372.0	0.0	762.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	390.6	372.0	-	762.6

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	322.0	264.3	0.0	586.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	322.0	264.3	-	586.3

b. Previous Change Explanations --

c. Current Change Explanations -- None.

JSIPS, December 31, 1992

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
63.550	--	--	--	--	--	--	--	--	63.550

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

GROUND IMAGERY SYSTEM:	Initial Contract Price Target	Ceiling	Qty
E-SYSTEMS (Garland Div), Dallas, TX F19628-87-C-0205, FPIF Award: August 14, 1987 Definitized: August 14, 1987	$109.5	$121.3	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$164.5	$184.0	2	$211.4	$215.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/21/92)	$-68.6	$-6.8
Net Change	$-68.6	$-6.8

Explanation of Change:

The initial target of $110M has increased over $50M for the reasons that follow. With the establishment of JSIPS, the Army, Air Force, and Marine Corps discontinued their individual imagery programs, and representatives of the three services signed a memorandum agreeing to share all non-recurring costs for commonly developed JSIPS items. However, JSIPS still competed with other related and non-related systems for funding within each of the three services. As a result, less than 2 years into development, the program was unable to meet its contract obligations because the Army and Marine Corps did not contribute their full share of program costs or made funds available too late to meet the program obligations. In September 1989, the Air Force restructured the full-scale development contract to resolve the immediate funding shortfall. The contract restructuring increased development costs by nearly $55M over the original price, reduced the quantity of JSIPS units to be delivered under full-scale development from three to two, delayed the planned delivery for the second JSIPS

15. Contract Information (Cont'd):
unit by 18 months, and resulted in an agreement to re-negotiate prices of the production options in the original contract.

The reason that the cost variance and schedule variance are higher than the EAC are that the Army system was not delivered when required by the restructured schedule. System integration and test took significantly longer than expected. The Air Force/Marine Corps system has not been delivered to date although the restructured delivery dates have passed. Delays encountered on the system are largely from problems with the Tape Cassette Recorders and inability of the contractor to deliver Interface Control Document-compliant tapes for system qualification testing.

The impact to the program since the contract ceiling is fixed and the contractor bears the entire burden of the cost overrun, is that we expect the contractor will submit a request for equitable adjustment (REA) for specific areas where he maintains the government is responsible for schedule delays and associated program cost increases.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 53.3% (8 yrs/15 yrs)

(2) Percent Program Cost Appropriated: 39.1% ($297.9 / $762.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY86-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	259.8	54.9	37.4	38.5	390.6
Procurement	38.1	9.5	79.3	245.1	372.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	297.9	64.4	116.7	283.6	762.6

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: RDT&E - All Sources								
1986				14.7	15.0	15.0	15.0	2.8
1987				13.5	14.3	14.3	14.3	2.7
1988				46.1	50.6	50.6	46.5	3.0
1989				32.0	36.3	36.3	32.2	4.2
1990				52.4	61.7	61.7	49.5	4.0
1991				26.5	32.4	31.3	20.4	4.3
1992				25.1	31.4	30.4	16.3	2.8
1993				14.2	18.1	2.0	0.3	2.4
1994				41.9	54.9			2.4
1995				27.9	37.4			2.3
1996				13.5	18.4			2.3
1997				9.2	12.9			2.2
1998				4.3	6.2			2.2
1999				0.7	1.0			2.2
Subtot	3			322.0	390.6	241.6	194.5	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: Procurement - All Sources								
1992	1	1.3	30.5	17.0	21.9			2.8
1993		0.6		12.3	16.2			2.4
1994		1.3		7.0	9.5			2.4
1995	3	5.5	33.1	57.6	79.3			2.3
1996	3	5.3	48.5	69.0	97.3			2.3
1997	2	6.7	19.0	68.1	98.1			2.2
1998		4.6		16.0	23.4			2.2
1999		4.1		12.2	18.4			2.2
2000		2.1		5.1	7.9			2.2
Subtot	9	31.5	131.1	264.3	372.0			
Appropriation: MILCON - All Sources - None.								
Appropriation: O&M - All Sources - None.								
Total	12	31.5	131.1	586.3	762.6	241.6	194.5	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1986				3.7	3.8	3.8	3.8	2.8
1987								2.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1988				20.7	22.7	22.7	22.7	3.0
1989				6.5	7.4	7.4	7.4	4.2
1990				16.5	19.4	19.4	17.7	4.0
1991				2.9	3.6	3.6	2.0	4.3
1992				7.5	9.4	9.4	1.4	2.8
1993				3.5	4.5			2.4
1994				19.5	25.5			2.4
1995				11.9	15.9			2.3
1996				5.4	7.4			2.3
1997				4.2	5.9			2.2
1998				0.7	1.0			2.2
1999				0.7	1.0			2.2
Subtot	2			103.7	127.5	66.3	55.0	

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

Appropriation: 2035 Other Procurement, Army

1992								2.8

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1993				0.4	0.5			2.4
1994				0.7	1.0			2.4
1995	1	0.9	17.1	24.7	34.0			2.3
1996				1.1	1.6			2.2
1997				1.2	1.7			2.2
1998				1.2	1.7			2.2
1999				1.2	1.8			2.2
Subtot	1	0.9	17.1	30.5	42.3			
Army	3	0.9	17.1	134.2	169.8	66.3	55.0	

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

Appropriation: 1319 Research, Development, Test + Eval, Navy

1988				12.4	13.6	13.6	11.5	
1989				11.6	13.1	13.1	10.6	
1990				7.0	8.2	8.2	6.7	4.0
1991				11.4	13.9	12.8	10.4	4.3
1992				12.8	16.0	15.6	11.6	2.8

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1993				5.5	7.0			2.4
1994				9.0	11.8			2.4
1995				4.4	5.9			2.3
1996				4.7	6.4			2.3
1997				2.6	3.7			2.2
1998				1.6	2.3			2.2
1999								2.2
Subtot				83.0	101.9	63.3	50.8	

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

Appropriation: 1109 Procurement, Marine Corps

1992								2.8
1993								2.4
1994								2.4
1995	2	3.6	16.0	20.5	28.2			2.3
1996	2	1.7	18.0	21.9	30.9			2.3
1997	2	1.7	19.0	22.2	32.0			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1109 Procurement, Marine Corps (Cont'd)								
1998								2.2
1999								2.2
Subtot	6	7.0	53.0	64.6	91.1			

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

Appropriation: 1810 Other Procurement, Navy								
1993								2.4
1994				2.6	3.5			2.4
1995				3.2	4.4			2.3
1996		3.2		11.6	16.3			2.3
1997		4.5		15.5	22.3			2.2
1998		4.3		13.2	19.4			2.2
1999		4.1		10.0	15.1			2.2
2000		2.1		5.1	7.9			2.2
Subtot		18.2		61.2	88.9			
Navy	6	25.2	53.0	208.8	281.9	63.3	50.8	

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1986				11.0	11.2	11.2	11.2	2.8
1987				13.5	14.3	14.3	14.3	2.7
1988				13.0	14.3	14.3	12.3	3.0
1989				13.9	15.8	15.8	14.2	4.2
1990				28.9	34.1	34.1	25.1	4.0
1991				12.2	14.9	14.9	8.0	4.3
1992				4.8	6.0	5.4	3.3	2.8
1993				5.2	6.6	2.0	0.3	2.4
1994				13.4	17.6			2.4
1995				11.6	15.6			2.3
1996				3.4	4.6			2.3
1997				2.4	3.3			2.2
1998				2.0	2.9			2.2
Subtot	1			135.3	161.2	112.0	88.7	

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3080 Other Procurement, Air Force								
1992	1	1.3	30.5	17.0	21.9			2.8
1993		0.6		11.9	15.7			2.4
1994		1.3		3.7	5.0			2.4
1995		1.0		9.2	12.7			2.3
1996	1	0.4	30.5	34.4	48.5			2.3
1997		0.5		29.2	42.1			2.2
1998		0.3		1.6	2.3			2.2
1999				1.0	1.5			2.2
Subtot	2	5.4	61.0	108.0	149.7			
USAF	3	5.4	61.0	243.3	310.9	112.0	88.7	
Grand Total	12	31.5	131.1	586.3	762.6	241.6	194.5	

Expenditures and Obligations reflect Program Office records as of 28 February 1993.

17. Production Rate Data:

a. Production Baseline Rate

Not required for pre-Milestone II programs.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		9.5		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		79.3		N/A	N/A
Procurement Qty		3		N/A	N/A
Proc. Unit Cost	N/A	26.433	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		245.1		N/A	N/A

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The JPO cost estimate determined that the Air Force Acquisition phase of the program, as originally baselined, was not executable. The JPO then restructured the Air Force program. This restructure resulted in an executable program that was briefed to both the Air Force and OSD CAIGs in November 1992 and January 1993 respectively. However, the restructure has affected the other services portions of the program and has therefore caused the JPO to reevaluate the overall O&S program strategy. The results of this reevaluation will be included in our next SAR.

b. Costs -- None.

There is no antecedent program.

c. Contractor Support Costs -- None.

There is no antecedent program.

AF-24 MLV III

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MED LAUNCH VEH III

AS OF DATE: December 31, 1992

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SAF/PAS
93-211 -

1. **Designation and Nomenclature (Preferred Name):**
Medium Launch Vehicle III (MLV III)

2. **DoD Component:** USAF

3. **Responsible Office and Telephone Number:** OASD(PA) DFOISR 93-S-364

SMC/CL
160 Skynet Street
Suite 1215
Los Angeles AFB, CA 90245-4683

Col William S. Files Jr.
Assigned: July 31, 1990
AV 833-2286 COMM (310) 363-2286

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0305119F (Shared) Project 642A
PROCUREMENT:
APPN 3020 ICN 23MLV0 (Air Force) (Shared)

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DEPARTMENT OF DEFENSE

5. **Related Programs:**
Global Positioning System (GPS)

6. **Mission and Description:**
National Security requirements dictate a continuing, highly reliable means of placing critical Department of Defense (DoD) satellites into required orbits. Assured access to space, directed by the President in the National Security Launch Strategy, will be accomplished through the use of a robust mix of Expendable Launch Vehicles (ELVs). The Medium Launch Vehicle III (MLV III) program provides procurement

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6. Mission and Description (Cont'd):

and launch of a medium payload class rocket capable of boosting the GPS IIR satellite to its transfer point. It also provides for engineering support and post-flight assessment to maintain high reliability. The MLV III program will not replace any defense programs.

7. Program Highlights:

a. Significant Historical Developments --
The program was initiated in 1990 because of the satellite block change of the Global Positioning System. With the transfer of launch responsibility from AFSC to AFSPACECOM, the requirement for the vehicle evolved until an acquisition strategy was solidified in Nov 91. The MLV III final Request for Proposal was released on 16 Sep 92 with a competitive Source Selection from Nov 92 to Apr 93.

b. Significant Developments Since Last Report --
This is the initial Selected Acquistion Report for the Medium Launch Vehicle III (MLV III) program.

The MLV III program is expected to satisfy the mission requirement.

c. Changes Since As Of Date --
The MLV III prime contract was awarded to McDonnell Douglas Corporation on 9 April 93.

8. Threshold Breaches:
There are currently no Acquisition Program Baseline (APB) (dated Apr 93) breaches, or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Production Estimate	Approved Program	Current Estimate
Program Initiation	MAR 91	MAR 91	MAR 91
Award Full Rate Production Contract	APR 93	APR 93	APR 93
Initial Launch Capability (ILC)	MAR 96	MAR 96	MAR 96

b. Previous Change Explanations -- This is the initial SAR.

c. Current Change Explanations -- None.

9d. Schedule (Cont'd):

d. References --

Production Estimate:
FY94 President's Budget dated 8 April 93.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 01 April 1993.

10. Performance Characteristics:

a. Performance —	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Payload Accommodation					
Requirement a:	GPS IIR Compatible	GPS IIR Compatible	/ GPS IIR Compatible	TBD	GPS IIR Compatible
Requirement b:	MLV Standard Payload Interface	MLV Standard Payload Interface	/ MLV Standard Payload Interface	TBD	MLV Standard Payload Interface
Payload Weight (lbs) to GPS Transfer Orbit	4704	4704	/ 4480		4480
Responsiveness					
Capacity					
# Days to Launch-on-Need	60	60	/ 60	TBD	60
# Launches per Year	4 +/- 2	4 +/- 2	/ 4 +/- 2	TBD	4 +/- 1
Safety	Full Compliance with AFSPACECOM 127-1	Full Compliance with AFSPACECOM 127-1	/ Meets Range Safety Approval		Full Compliance with AFSPACECOM 127-1

b. Previous Change Explanations -- This is the initial SAR.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
FY94 President's Budget dated 8 April 93.

10d. Performance Characteristics (Cont'd):

Approved Program:
AFAE Approved Acquisition Program Baseline dated 01 April 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	45.8	45.8	45.8
Procurement	1007.7	1007.7	1007.7
Total Launch Vehicle Flyaway	(958.6)		(958.6)
Total Other Weapon System	(49.1)		(49.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 87 Base-Year $	1053.5	1053.5	1053.5
Escalation	409.4	409.4	409.4
Development (RDT&E)	(15.9)	(15.9)	(15.9)
Procurement	(393.5)	(393.5)	(393.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1462.9	1462.9	1462.9

b. Quantity —			
Development (RDT&E)	0	0	0
Procurement	25	25	25
Total	25	25	25

All end-itmes are considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
FY94 President's Budget dated 8 April 93.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 01 April 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1462.9	1462.9	1462.9
(2) Quantity	25	25	25
(3) Unit Cost	58.516	58.516	58.516
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	24.5	24.5	116.5
Less CY Adv Proc	19.5	19.5	33.2
Plus PY Adv Proc	0.0	0.0	19.5
Net Total	5.0	5.0	102.8
(2) Quantity	0	0	2
(3) Unit Cost	N/A	N/A	51.400

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	61.7	1401.2	0.0	1462.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	61.7	1401.2	-	1462.9

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	45.8	1007.7	0.0	1053.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	45.8	1007.7	-	1053.5

b. Previous Change Explanations --

c. Current Change Explanations -- None.

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
58.516	--	--	--	--	--	--	--	--	58.516

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status —

(1) Percent Program Completed: 25.0% (3 yrs/12 yrs)

(2) Percent Program Cost Appropriated: 2.4% ($34.8 / $1462.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY91-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2002)	Total
RDT&E	10.3	8.8	8.2	34.4	61.7
Procurement	24.5	116.5	177.1	1083.1	1401.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	34.8	125.3	185.3	1117.5	1462.9

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1991				0.5	0.6	0.6	0.4	4.3
1992				1.9	2.3	1.6	0.3	2.8
1993				5.9	7.4	2.6		2.4
1994				6.9	8.8			2.4
1995				6.3	8.2			2.3
1996				3.4	4.6			2.3
1997				3.5	4.7			2.2
1998				5.0	7.0			2.2
1999				5.6	8.0			2.2
2000				2.2	3.2			2.2
2001				2.3	3.4			2.2
2002				2.3	3.5			2.2
Subtot				45.8	61.7	4.8	0.7	

Obligation and expenditure information reflects official program office records as of 12 Apr 93.

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force								
1993				19.2	24.5			2.4
1994	2		76.6	89.1	116.5			2.4
1995	3		117.4	132.6	177.1			2.3
1996	4		160.0	180.2	246.1			2.3
1997	6		226.9	217.2	303.2			2.2
1998	5		181.1	195.6	279.3			2.2
1999	5		196.6	157.0	229.0			2.2
2000				5.9	8.8			2.2
2001				5.4	8.2			2.2
2002				5.5	8.5			2.2
Subtot	25		958.6	1007.7	1401.2			
Grand Total	25		958.6	1053.5	1462.9	4.8	0.7	

Obligation and expenditure information reflects official program office records as of 12 Apr 93.

17. Production Rate Data:

a. Production Baseline Rate

The MLV-III contract contains annual procurement options for one to six vehicles per year. At least one launch vehicle must be procured annually. The procurement profile, beginning in FY94 is 2-3-4-6-5-5. The launch vehicles are procured lead-time away to support GPS-IIR, expected replenishment launch requirements.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		116.5		N/A	N/A
Procurement Qty		2		N/A	N/A
Proc. Unit Cost	N/A	58.250	N/A	N/A	N/A
FY 1995					
Procurement Cost		177.1		N/A	N/A
Procurement Qty		3		N/A	N/A
Proc. Unit Cost	N/A	59.033	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		1083.1		N/A	N/A

Since production is less than six or more in any two fiscal years, production information is not required.

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operations and support includes activities and other costs incurred at the launch site. The activities are performed by the MLV III Prime Contractor, AFSPACECOM, and other contractor(s) (hired by AFSPACECOM) to support the launch base and its operations. Responsibility and budget (except as noted below) for these activities was recently transferred from AFMC to AFSPACECOM. Other costs at the launch site refers to the cost of liquid launch

18a. Operating and Support Costs (Cont'd):
propellants.

The MLV III Prime Contractor performs the launch operations at the launch base that are required to receive, inspect, store, process, checkout, test, and launch the launch vehicle. The MLV III Prime also maintains and refurbishes the facilities and equipment at the launch base required during the life of the system.

AFSPACECOM manages the MLV III Prime Contractor's launch operations activities. In addition, AFSPACECOM is responsible for the Range Support at the launch site. In general, Range Support includes supplies, TDY, missile flight analysis, custodial services, scheduling, logistics support, grounds maintenance, communications systems operations, program management, NASA contract support, launch complex operations, maintenance and corrosion control on structures and vehicles, sanitation, security police, photography, telemetry, pad safety, data processing and evaluation support, ordinance storage and trailer leases.

The budget for Range Support and launch propellants has been transferred to AFSPACECOM. However, the budget for the Prime Contract launch operations has remained with AFMC. Launch operations is a separate Contract Line Item on the MLV III Prime Contract and is managed by AFSPACECOM. Because the transfer of responsibility and budget to AFSPACECOM has just recently been accomplished; costs represent the latest AFMC estimate (1 April 93). Furthermore, the costs represent the average annual operating and support costs required to be capable of launching four MLV III's.

b. Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Capability to launch 4 MLV III's	Avg Annual Cost Per Antecedent (N/A)
Prime Contract O & M	15.2	N/A
Range Support	8.3	N/A
Launch Propellants	1.4	N/A
Total	24.9	N/A

c. Contractor Support Costs — None.

There are no Contractor Support Costs for the MLV III program. The MLV III Prime Contractor performs the operations and maintenance on the MLV III System. AFSPACECOM provides additional Range Support, as discussed in Section 18a. All costs associated with operating and

18c. Operating and Support Costs (Cont'd):
maintaining the MLV III System are included in Section 18b. There is no antecedent program.

A-20 M1A2 UPGRADE

92-050

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: M1A2 ABRAMS UPGRADE

AS OF DATE: December 31, 1992

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):**
Tank, Combat, Full Tracked, M1A2
(M1A2 Abrams Tank)

2. (U) **DoD Component:** Army

3. (U) **Responsible Office and Telephone Number:**
U.S. ARMY TANK-AUTOMOTIVE COMMAND
ATTN: SFAE-ASM-AB
WARREN, MI 48497-5000
COL JOHN S. CALDWELL
Assigned: July 15, 1990
AV 786-6885 COMM (313) 574-6885

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 23735 (Shared) For M1A2 Development
Project D330
PE 63639 (Shared) For M1A2 Armament
Project DC315

Concur in Classification as marked
25 MAY 1993
SECURITY REVIEW, ODCSINT, HQDA

[redacted]

OASD(PA) DFOISR 93-F-682

*** [redacted] ***

4. (U) **Program Elements/Procurement Line Items (Cont'd):**

PROCUREMENT:
APPN 2033 ICN G82917 (Army) (Shared) For M1A2 LRIP
APPN 2033 ICN GA0151 (Army)
APPN 2033 ICN GA0167 (Army) (Shared)
APPN 2033 ICN GA0750 (Army)
APPN 2033 ICN GB1300 (Army) (Shared)

O & M:
PE DESCOM (Shared) For M1 Overhaul

5. (U) **Related Programs:**
Tank Main Armament Systems (TMAS); Combat Vehicle Improvement Program; PM, Survivability Systems.

6. (U) **Mission and Description:**
The mission of the M1A2 Abrams tank is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The M1A2 is currently in low rate production. The Abrams Upgrade Program will replace selected M1 tanks with M1A2 tanks beginning in Fiscal Year 1995. Older model M1 tanks will be upgraded to the M1A2 configuration in order to make them more survivable, fightable, and lethal tanks. Improvements include the combat proven M1A1 features [the 120mm main gun; Nuclear, Biological, and Chemical (NBC) protection; and heavy armor] and the new enhancements linked by the digital distributed data and power architecture of the M1A2. The Inter-vehicular Information System (IVIS) and Position Navigation (POS/NAV) equipment provide improved battlefield command, control, and communications over the M1A1. The new Commander's Independent Thermal Viewer (CITV) also speeds up the target acquisition process so that the gunner may engage more targets in a shorter time interval. The M1A2 Abrams tank replaces the M1A1 tank in the CONUS Contingency Force.

7. (U) **Program Highlights:**
a. (U) Significant Historical Developments --
The last M1 tank, equipped with a 105mm main gun, was delivered to the Army in May 1986. The successor M1A1 tank, equipped with a 120mm main gun, ended production for the U.S. Army in April 1993. The particulars of these earlier tank acquisitions are given in the December 31, 1991 SAR for the ABRAMS SERIES TANK. Ten M1A2 prototypes were delivered to Army test sites in 1991. An Early User Test & Evaluation (EUT&E), using five of these prototypes, was conducted from June through December 1991. The other prototypes were used to assess ballistic and nuclear vulnerability, system reliability, and logistic supportability. The first of five M1A2 pilot production vehicles was delivered in March 1992. Based on the results of a special ASARC held on March 21, 1992, the Army Acquisition Executive (AAE) decided to proceed with low rate

7a. (U) Program Highlights (Cont'd):

production of 62 M1A2 tanks. The Fiscal Year 1992 funds, which had been appropriated to begin the remanufacture of M1 Abrams tanks to either the M1A1 or the M1A2 configuration, were subsequently offered for rescission. The Congress denied the rescission and directed the Defense Department to proceed with a program to upgrade the M1 tank to the M1A2 configuration. Protection of the tank related industrial base was the most significant motivation for the Congressional decision. The DoD released the 1992 funds to the Army on August 28, 1992. An Acquisition Decision Memorandum (ADM), signed on December 18, 1992 by the Deputy to the USD(A), approved the Army's Program Baseline for the Abrams Upgrade Program and authorized the Army to proceed as planned. As of December 31, 1992, 6 of the planned 62 M1A2 production tanks had been delivered.

This is the initial SAR for the M1A2 Abrams Upgrade Program.

The M1A2 tank is expected to satisfy the mission requirement.

b. (U) Significant Developments Since Last Report -- None.

c. (U) Changes Since As Of Date --
Formal notification to Congress of a pending sale of M1A2 tanks to Kuwait occurred on January 5, 1993. A letter contract was awarded to General Dynamics Land Systems Division on February 16, 1993 for the manufacture of 4 pilot upgrade tanks and the development of a Technical Data Package (TDP) for the M1A2 Upgrade Program. A larger contract, to procure long lead material (LLM) for the first phase of the program (206 tanks), was awarded on February 26, 1993. On March 2, 1993, General Dynamics was also awarded a contract to provide LLM for the sale of 218 M1A2 tanks to Kuwait. In April 1993, the Lima Army Tank Plant (LATP) stopped manufacturing new M1A2 tanks for the U.S. government and began producing the 315 tanks ordered by the Kingdom of Saudi Arabia.

8. (U) Threshold Breaches:
There are no breaches to the DAE Approved Acquisition Program Baseline, dated December 18, 1992, and there are no Nunn-McCurdy unit cost breaches.

9. (U) **Schedule:**

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Block II ASARC Approval	FEB 85	FEB 85	FEB 85
Award Block II Preliminary System Development Contract	JUL 85	JUL 85	JUL 85
Award ICWS/SE #3 Preliminary Engineering Development Contract	SEP 86	SEP 86	SEP 86
Award CO2 LRF Preliminary Engineering Development Contract	SEP 86	SEP 86	SEP 86
Award Block II Advanced System Development Contract	DEC 87	DEC 87	DEC 87
M1A2 Milestone II Decision Review	DEC 88	DEC 88	DEC 88
Award Block II FSD Contract	DEC 88	DEC 88	DEC 88
DAB Program Review	AUG 89	AUG 89	AUG 89
Special M1A2 ASARC	MAR 90	MAR 90	MAR 90
First Prototype Delivery (FSED)	JAN 91	JAN 91	JAN 91
Technical Test			
Start	JAN 91	JAN 91	JAN 91
Complete	MAR 92	MAR 92	MAR 92
User Test			
Start	JUN 91	JUN 91	JUN 91
Complete	DEC 91	DEC 91	DEC 91
LRIP Decision (62 Tanks)	MAR 92	MAR 92	MAR 92
Mod FY91 M1A1 Production Contract (Incorporating Block II Changes)	MAY 92	MAY 92	MAY 92
Live Fire Test			
Start	JAN 93	JAN 93	JAN 93
Complete	JUL 93	JUL 93	SEP 93(Ch-1)
Production Qualification Test			
Start	FEB 93	FEB 93	FEB 93
Complete	MAR 94	MAR 94	MAY 94(Ch-2)
IOC (Training Base)	FEB 93	FEB 93	FEB 93
Initial Operational Test and Evaluation			
Start	SEP 93	SEP 93	SEP 93
Complete	DEC 93	DEC 93	DEC 93
First Upgrade Pilot Delivery	MAR 94	MAR 94	MAR 94
M1A2 MS III Decision	APR 94	APR 94	APR 94
First Unit Equipped (CONUS)	APR 95	APR 95	APR 95
Depot Support Established	SEP 97	SEP 97	SEP 97

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) - Changed from Jul 93 to Sep 93 to conform to the M1A2 Live Fire Test (LFT) Detailed Test Plan approved in March 1993.

9c. (U) Schedule (Cont'd):
(Ch-2) - Changed from Mar 94 to May 94 to conform to the M1A2 Production Qualification Test (PQT) Detailed Test Plan approved in February 1993.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, December 18, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 18 December 1992.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Maximum Width (inches)	144	144 / 144	144	144	
Maximum Height (inches)(grnd to center of turret roof)	96	96 / 96	96	96	
Maximum Combat Weight (tons)	68.5	68.5 / 69.5	68.7	68.7	(CH-1)
Minimum Range (miles)					
Paved Roads					
With NBC	257	257 / 243	TBD	243	(CH-2)
Without NBC	270	270 / 256	TBD	256	(CH-3)
Maximum Speed (mph)					
Paved Roads (0% slope)	41.5	41.5 / 41.5	TBD	41.5	
Cross Country	30	30 / 30	TBD	30	
Acceleration (0-20 mph) (sec)					
Paved Roads(0%slope)					
With NBC	7.5	7.5 / 9.0	TBD	7.5	
Without NBC	7.2	7.2 / 9.0	TBD	7.2	
Combat Mission Reliability (MMBF)	360	360 / 320	TBD	320	(CH-4)
System Maintainability (Maintenance Ratio)	1.04	1.04 / 1.40	TBD	1.25	(CH-5)
Track Life (miles)	2000	2000 / 1000	TBD	2000	
Air Transportability	C5A,C17	C5A,C17 / C5A,C17	TBD	C5A,C17	
Fightability-Improved Commander's Weapon Station Visibility over M1A1 (%)	40	40 / 25	TBD	25	(CH-6)

10a. (U) **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Location Determination (% of distance traveled)	+/-2	+/-2	/ +/-3	TBD	+/- 3	(CH-7)
Heading error (after 1 hr) (deg-RMS)	+/-1	+/-1	/ +/-3	TBD	+/- 3	(CH-8)
Testability (BIT) (%)						
On-Board System Level Detection Capability	95	95	/ 95	TBD	95	
LRU Fault Isolation	95	95	/ 90	TBD	90	(CH-9)
Maximum False Alarm Rate	5	5	/ 10	TBD	10	(CH-10)

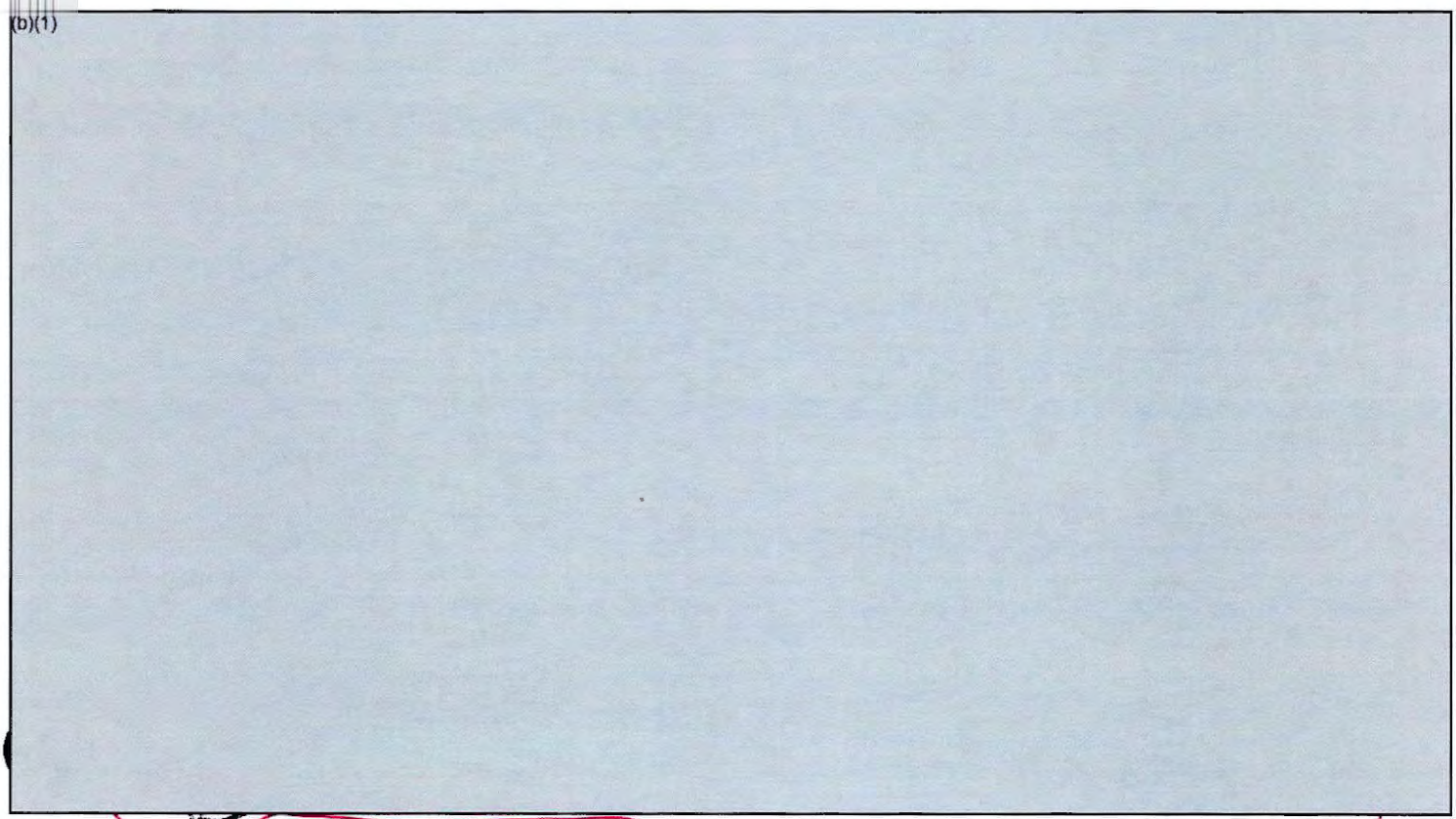
(b)(1)

[redacted]

10a. (U) **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

(b)(1)



d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, December 18, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 18 December 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	534.1	534.1	534.1
Procurement	3543.4	3543.4	3478.8
Total Rollaway	(3157.9)		(3224.0)
Other Wpns Sus	(280.5)		(231.0)
Peculiar Support	(81.9)		(15.4)
Initial Spares	(23.1)		(8.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	173.0	N/A	155.7
Total FY 89 Base-Year $	4250.5	4077.5	4168.6

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	1556.9	1484.8	1213.9
Development (RDT&E)	(23.0)	(23.0)	(22.3)
Procurement	(1461.8)	(1461.8)	(1137.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(72.1)	(N/A)	(54.5)
Total Then-Year $	5807.4	5562.3	5382.5

b. (U) Quantity --

Development (RDT&E)	0	N/A	0
Procurement	1060	1060	1060
Total	1060	1060	1060

Note: Excludes 10 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

Also excluded are an additional 5 production pilots and 4 upgrade pilots that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- The Kingdom of Saudi Arabia (KSA) is buying new production M1A2 tanks and associated support items (FMS Case: KSA VKZ). The sales agreement is being amended to reduce the total case value from $5.9 billion to $2.9 billion and to cut the quantity of M1A2 tanks from 465 to 315.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, December 18, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 18 December 1992.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	5382.5	5382.5	5382.5
(2) Quantity	1060	1060	1060
(3) Unit Cost	5.078	5.078	5.078
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	167.9	167.9	99.3
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	54.2	54.2	0.0
Net Total	222.1	222.1	99.3
(2) Quantity	0	0	72
(3) Unit Cost	N/A	N/A	1.379

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Development Estimate	557.1	5005.2	245.1	5807.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.7	-344.4	-16.9	-362.0
Quantity	-	-	-	-
Schedule	-	+164.3	+5.1	+169.4
Engineering	-	-	-	-
Estimating	-	+11.5	-23.1	-11.6
Other	-	-	-	-
Support	-	-220.7	-	-220.7
Subtotal	-0.7	-389.3	-34.9	-424.9
Total Changes	-0.7	-389.3	-34.9	-424.9
Current Estimate	556.4	4615.9	210.2	5382.5

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Development Estimate	534.1	3543.4	173.0	4250.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+56.4	-	+56.4
Engineering	-	-	-	-
Estimating	-	+9.7	-17.3	-7.6
Other	-	-	-	-
Support	-	-130.7	-	-130.7
Subtotal	-	-64.6	-17.3	-81.9
Total Changes	-	-64.6	-17.3	-81.9
Current Estimate	534.1	3478.8	155.7	4168.6

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	--	-0.7
Revised estimates for technical and user testing. (Estimating)	-0.2	-0.4

13c. (U) **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
Current and prior year inflation offset. (Estimating)	+0.2	+0.4
RDT&E Subtotal	--	-0.7
(2) Procurement		
Revised escalation indices. (Economic)	--	-344.4
Revised procurement schedule. (Schedule)	+56.4	+164.3
Current and prior year inflation offset. (Estimating)	+9.7	+11.5
Other Weapon System Costs. (Support)	-49.5	-95.5
Peculiar Support [Training Devices]. (Support)	-66.5	-102.0
Initial Spares. (Support)	-14.7	-23.2
Procurement Subtotal	-64.6	-389.3
(3) O & M		
Revised escalation indices. (Economic)	--	-16.9
Revised M1 overhaul schedule. (Schedule)	--	+5.1
Current and prior year inflation offset. (Estimating)	+0.1	+0.1
Revised M1 overhaul estimates. (Estimating)	-17.4	-23.2
O & M Subtotal	-17.3	-34.9

14. (U) **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5.479	-0.342	--	0.160	--	-0.011	--	-0.208	-0.401	5.078

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) M1A2 Upgrade LLM:	Initial Contract Price Target	Ceiling	Qty
General Dynamics Corp., Warren, MI DAAE07-93-C-A003, CR Award: February 26, 1993 Definitized: April 30, 1994	$0.0	$202.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$0.0	$202.0	0	$202.0	$202.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change: None.

This contract provides for Long Lead Material (LLM) funding for the first phase of the M1A2 Upgrade Program. It is expected that this contract will be rolled up into a Firm Fixed Price (FFP) production contract in April 1994. The current price is the estimated termination liability amount in April 1994. Because this contract will be incorporated into an FFP contract, cost and schedule variances information is not required.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 45.0% (9 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 29.9% ($1610.1 / $5382.5)

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY85-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2004)	Total
RDT&E	543.8	12.6	-	-	556.4
Procurement	1061.1	99.3	151.9	3303.6	4615.9
MILCON	-	-	-	-	-
O&M	5.2	10.6	22.3	172.1	210.2
Total	1610.1	122.5	174.2	3475.7	5382.5

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1985				40.2	36.2	36.2	36.2	3.4
1986				24.5	22.7	22.7	22.7	2.8
1987				25.7	24.5	24.5	24.5	2.7
1988				74.6	73.6	73.6	73.6	3.0
1989				118.5	121.6	121.6	121.6	4.2
1990				69.9	74.6	74.6	74.6	4.0
1991				105.8	117.4	117.4	117.4	4.3
1992				62.2	70.8	54.5	6.7	2.8
1993				2.1	2.4	0.3	0.1	2.4

16c. (U) **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1994				10.6	12.6			2.4
Subtot				534.1	556.4	525.4	477.4	

Obligations and Expenditures reflect program office records as of March 31, 1993.

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

1986		5.3		5.3	5.1	5.1	5.1	2.8
1987		0.6		0.6	0.6	0.6	0.6	2.7
1988								3.0
1989								4.2
1990		89.9		164.3	182.3	182.3	166.3	4.0
1991	62	77.2	216.7	417.5	475.3	324.5	148.3	4.3
1992		10.6		197.2	229.9	141.5	2.4	2.8
1993		10.5		140.8	167.9	3.6	0.1	2.4
1994	72	4.8	238.5	81.4	99.3			2.4
1995	134	4.6	407.3	121.8	151.9			2.3
1996	42		122.8	187.4	238.9			2.3
1997	42		121.2	182.6	237.9			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2033 Proc of Weapons & Tracked Combat Veh (Cont'd)								
1998								2.2
1999	42		119.8	172.5	234.8			2.2
2000	167		465.8	507.9	706.4			2.2
2001	166		450.5	461.1	655.4			2.2
2002	167		443.9	457.9	665.1			2.2
2003	166		434.0	370.3	549.7			2.2
2004				10.2	15.4			2.2
Subtot	1060	203.5	3020.5	3478.8	4615.9	657.6	322.8	

Obligations and expenditures reflect program office records as of March 31, 1993.

Appropriation: 2020 Operation & Maintenance, Army								
1993				4.5	5.2	2.1	0.9	2.4
1994				8.9	10.6			2.4
1995				18.3	22.3			2.3
1996				12.2	15.2			2.3
1997				6.1	7.8			2.2
1998				2.3	3.0			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2020 Operation & Maintenance, Army (Cont'd)								
1999				3.8	5.1			2.2
2000				17.5	23.8			2.2
2001				24.3	33.8			2.2
2002				24.4	34.6			2.2
2003				24.3	35.3			2.2
2004				9.1	13.5			2.2
Subtot				155.7	210.2	2.1	0.9	
Grand Total	1060	203.5	3020.5	4168.6	5382.5	1185.1	801.1	

Obligations and Expenditures reflect program office records as of March 31, 1993.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is pre-Milestone III and no full-rate production baseline has been determined.

17b. (U) **Production Rate Data (Cont'd)**:

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	99.3	99.3	99.3	0.0	0.0
Procurement Qty	72	72	72	0	0
Proc. Unit Cost	1.379	1.379	1.379	0.000	0.000
FY 1995					
Procurement Cost	151.9	151.9	151.9	0.0	0.0
Procurement Qty	134	134	134	0	0
Proc. Unit Cost	1.134	1.134	1.134	0.000	0.000
Balance of Proc. (FY 1996 to Complete)	3303.6	3303.6	2686.6	0.0	-617.0

The "Current Estimate" is considered to be at the "minimum sustaining rate" for the two budget years and beyond. A meaningful comparison with the "maximum rate" cannot be made in this format because the unit costs for the budget years are artificially low. This is due to the fact that execution of the first phase of the M1A2 upgrade program (206 tanks in FY's 1994-1995) depends heavily on the funding appropriated in FY's 1991-1993. For the balance of the program to completion, the fiscal year buy quantity is 198 tanks per year for the "maximum rate" computation. The requirements for spares and training devices have been held constant in both alternatives. The costs shown are also predicated on the assumption that there will be 120 FMS units per year in addition to programmed Army quantites.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	10/10
Procurement	6/6

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) **Operating and Support Costs**:

18a. (U) Operating and Support Costs (Cont'd):

a. (U) Assumptions and Ground Rules --

The O&S costs shown below are taken directly from TABLE 3 in a January 1992 report prepared by the TACOM Systems and Cost Analysis Directorate (Report No. 91-06-07, "The Abrams Tank System M1 to M1A2 Conversion Program"). A conversion quantity of 1,840 tanks was used in this study. The total O&S cost projected in the study is based on a mix of M1s, M1A1s, and M1A2s (62 new production M1A2s and 1,840 converted M1s) operating for 20 years in active units, reserve units, and in the training base. Tanks in the active units are assumed to be driven for 800 miles per year. Four dedicated crew members are assumed for each active vehicle. The depot maintenance costs are based on a minimal vehicle overhaul program supplemented by the Inspect and Repair Only as Necessary (IRON) program.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per M1A2 in an Active Army Battalion	Avg Annual Cost Per M1A1 in an Active Army Battalion
Replen Repair Parts	37.9	20.2
Replenishment Spares	114.5	77.4
Petro, Oil & Lubricants	7.9	7.9
Training Ammunition	85.7	85.7
Depot Maintenance	1.8	1.4
Crew	155.7	155.7
Maintenance Personnel	60.7	56.2
Support Personnel	133.6	131.3
Total	597.8	535.8

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
O&M	---	8.4	8.4	---	16.8
Industrial Fund	---	---	---	---	---
Total	---	8.4	8.4	---	16.8

92-040

A-12 FAAD C²I

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: FAAD C2I

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
   Forward Area Air Defense Command, Control, and Intelligence

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

AIR DEFENSE COMMAND AND CONTROL SYST
ATTN: SFAE-CC-AD
REDSTONE ARS, AL 35898-5600

COL DANIEL L. MONTGOMERY
Assigned: April 17, 1992
AV 788-3441 COMM (205) 895-3441

FAAD C2

Air Defense Command and Control
Systems Project Office
Program Executive Office
Command and Control Systems
Redstone Arsenal, AL 35898-5600

LTC RAYMOND D. ZEGLEY
Product Manager
Assigned: 21 Jun 91
AV 788-3517
COMM (205) 895-3517

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

[redacted]

OASD(PA) DFOISR 93-0739

3. (U) **Responsible Office and Telephone Number (Cont'd):**

GBS

FAAD Sensors Product Office Program Executive Office, Intelligence, Electronic Warfare Redstone Arsenal, AL 35898-5600	LTC MICHAEL I. HOWELL Product Manager Assigned: 18 Sep 90 AV 788-1673 COMM (205) 722-1673

NCTR

Non Cooperative Target Recognition (NCTR) Project Manager Combat ID Program Executive Office Intelligence, Electronic Warfare Fort Meade, MD 20755-5313	COL Thomas Rosner Assigned: 10 Jun 92 AV 923-9573 COMM (301) 621-9573

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 63706 (Shared) (Shared)
Project 243 (Shared)
PE 63709 (Shared), 63740, 64709 (Shared), 64741, 64817, 64820
PROCUREMENT:
APPN 2035 ICN AD5050 (Army)
APPN 2035 ICN AD5051 (Army)
APPN 2035 ICN AD5053 (Army)
APPN 2035 ICN AD5054 (Army)
APPN 2035 ICN BA9106 (Army) (Shared)
APPN 2035 ICN BA9702 (Army)
APPN 2035 ICN MX1010 (Army) (Shared)
APPN 2035 ICN WK5053 (Army)

5. (U) **Related Programs:**
Combined Arms, Bradley Stinger Fighting Vehicle (BSFV), AVENGER, Non-Line of Sight (NLOS), Enhanced Position Location Reporting System (EPLRS), Joint Tactical Information Distribution System (JTIDS), Common Hardware/Software (CHS), Standard Integrated Command Post System (SICPS), High-to-Medium Air Defense Command and Control (HIMAD C2), SINCGARS, and Light and Special Divisions Interim Sensor (LSDIS).

6. (U) **Mission and Description:**

FAAD C2I Program

The Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) Program integrates weapons, sensors, communications, and command, control and intelligence (C2I) architecture to counter the

6. (U) Mission and Description (Cont'd):

entire spectrum of the air threat to the forward area through the 90's. The acquisition strategy relies heavily on non-developmental items (NDI) and preplanned product improvements (P3I) to rapidly overcome our current air defense command, control, and intelligence deficiencies and to keep pace with the advancing technologies.

As the air defense node of the Army Tactical Command and Control System (ATCCS), the FAAD C2I System provides critical air defense information to support the command and control decision process at various levels of command. The FAAD C2I System ties weapons together by a C2I network and integrates Forward Area Air Defense Systems (FAADS) into the Army Command and Control System (ACCS) architecture. The C2I initiative incorporates a family of sensors and identification equipment (ground and aerial, active and passive) with automated data processing and distribution capability. The mission will be accomplished through collection, digital processing and dissemination of target information, air threat warning, and the Battalion Tactical Operations Center (BNTOC). The FAAD C2I System will also provide target data processing and display capabilities at the Air Battle Management Operations Center (ABMOC), the Army Airspace Command and Control (A2C2) element, Sensor/Command and Control (C2) node, battery, platoon, and fire unit levels.

The FAAD C2I System also provides track information to the Combined Arms Initiative (armor, infantry, and aviation). The FAAD C2I Program, using a systems approach, will integrate these relatively independent systems together to allow engagement of the enemy air threat at maximum weapons ranges in the forward area. The components will work together to maximize total force effectiveness across the divisional area. The FAAD C2I program is now structured in a block format which groups software versions 1-3 and OPA funds to support fielding to 3 light and special divisions and a training base as block I; software version 4 and OPA funds to support fielding to the remaining 15 units and retrofit Block I fielded units as Block II; software version 5 as Block III and P3I.
BLOCK I

Block I consists of software versions 1, 2, & 3 for light and special division applications, fielding for initial engagement operations, systems operations, air battle management, light and special division interim sensor (LSDIS), and AWAC sensors. Software version 3 includes versions 1 and 2 which were not released but were used as the developmental basis for software version 3.

Block I is the FAAD C2 System and includes the command and control (C2) software development required to perform the overall mission of

6. (U) Mission and Description (Cont'd):

the FAAD C2I System. The software developed in the FAAD C2 program integrates: (1) ATCCS Common Hardware/Software (CHS) processors, displays, and associated peripherals; (2) Army Data Distribution System (JTIDS and EPLRS); (3)combat net radios (SINCGARS); (4) FAAD sensors and LSDIS; (5) FAAD weapon systems; (6) combined arms interface; and (7) AWACS.

BLOCK II

Block II consists of the FAAD C2, GBS, and NCTR systems and includes the software version 4 for initial heavy division applications plus light and special divisions capabilities. The software capabilities also support fielding for additional engagement operations, additional systems operations, additional air battle management, ground based sensor (GBS) and HIMAD sensor. Includes software capabilities developed for Block I.

The FAAD GBS is the key air surveillance and target acquisition/tracking capability for Divisional and Corps FAAD weapons. The GBS consists of a radar-based sensor system with its prime mover/power, Identification Friend or Foe (IFF), and FAAD Data Link interfaces. The GBS is an advanced three dimensional battlefield air defense radar which uses a modern phased array antenna. The GBS automatically detects, tracks, classifies, identifies and reports targets (fixed and rotary wing). Targets can be hovering to fast moving, from nap of the earth to the maximum engagement altitude of FAAD weapons. Very accurate and quick reacting, GBS acquires targets sufficiently forward of the Forward Line of Own Troops (FLOT) to improve FAAD weapon reaction time and allow engagement at optimum ranges. GBS's integrated IFF helps prevent fratricide of Army Aviation and Air Force aircraft. The dynamic nature of Airland Battle requires that Army forces capitalize on the beyond visual identification range capabilities of air defense weapons, yet maintain freedom of manuever by friendly aviation and air forces. Passive, Hostile and Friendly Identification devices developed by this project will identify foes at a range sufficient to permit maximum weapons range and also preclude engagement of friendly aircraft (fratricide). Emphasis is placed on technologies for Non-Cooperative Target Recognition (NCTR) that exploit the inherent and unique signature of air platforms. NCTR Electronic Support Measures (ESM) passively identifies aircraft by recognizing their electronic emissions. The device collects, processes, and analyzes data for comparison to a signature library to positively identify the aircraft. The NCTR device will be physically and electronically integrated into air defense weapons and/or sensors. The identification data will be added to radar track messages and/or displayed on the fire control display of air defense

6. (U) Mission and Description (Cont'd):

weapons.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

FAAD C2I Program

The Short Range Air Defense Command and Control (SHORAD C2) program was presented to the Army Systems Acquisition Review Council (ASARC) (MDR II) on March 26, 1985. On September 3, 1985, the ASARC program was approved by the Vice Chief of Staff of the Army (VCSA). On January 3 and 4, 1986, an ASARC level review directed that SHORAD C2 become a subsystem of the FAAD system and that SHORAD C2 be redesignated FAAD C2I. On July 29, 1986, the Joint Requirements and Management Board (JRMB), a forerunner of the Defense Acquisition Board (DAB), approved the concept for execution of the overall FAAD program as a system of systems and approved the following segments of FAAD C2I:

(1) Full scale development (beginning with a Build I demonstration) of the FAAD C2I system software.

(2) A ground based sensor NDI acquisition strategy to procure four test articles to support other FAAD developmental and operational testing, and 13 low rate initial production (LRIP) units to be used for operational test and evaluation, production verification, and initial training.

In November 1988, the Deputy Secretary of Defense concurred with the chief of Staff of the Army request to restructure the FAAD C2I program to field a FAAD C2 capability. This authorized a change to the FAAD C2I Build I full scale development program to allow for a fieldable system rather than a demonstration system. Build II of the program, which was to be the full scale development effort bringing the entire FAAD C2I System up to an Initial Operational Capability, was also changed. Some elements of Build I were deferred and some elements from Build II were added to Build I to make Build I a fieldable system to Army divisions. A March 1989 Secretary of Defense Decision Memorandum (SDDM) approved the restructure of the FAAD C2 program to field an initial capability to perform limited air defense engagements and essential force control interfaces within the divisions. The May 90 Army Acquisition Executive Acquisition Decision Memorandum approved early development of a tailored FAAD C2 for fielding to Light and Special divisions followed by development of the objective system to be fielded to all Army divisions.

This restructure was due to the changing threat environment and

7a. (U) Program Highlights (Cont'd):

budget reductions and availability of sensors and data distribution capabilities supportive of Light divisions. The restructured program will provide early development of a tailored FAAD C2 for fielding to light and special divisions established milestone "Command, Control and Intelligence Development Test (Light Division) (C2I Dev Test (LT))" for Nov 92 and milestone "First Unit Equipped (Light Division) (FUE LT)" for Sep 93 following a Program Executive Office Command, Control Systems (PEO CCS) fielding decision scheduled for May 93. The restructured program further established a heavy division C2I Initial Operational Test and Evaluation (IOT&E) for Oct and Nov 94 and milestone FUE for heavy divisions for Aug 95 following a Defense Acquisition Board (DAB) production decision scheduled for Mar 95.

The Milestone II/IIIA Acquisition Decision Memorandum (ADM) of August 1986 approved the GBS NDI acquisition strategy and LRIP. The first buy of sensors are planned to be RDT&E funded pre-production sensors to complete Government technical and operational testing in the RDT&E phase. After completion of technical testing, the pre-production sensors will be refurbished to fully configured units. In FY 94, the Program Executive Office Intelligence, Electronic Warfare (PEO IEW) will conduct an In Process Review (IPR), following successful completion of the pre-production phase exit criteria and an operational assessment, to approve low rate production. In FY 95, a full scale production (FSP) Defense Acquisition Board (DAB) will be conducted following successful completion of all remaining Technical Tests and Initial Operational Test and Evaluation (IOT&E).

A request for proposal (RFP), DAAH01-87-R-A997, was issued April 19, 1988 for FAAD GBS. The acquisition strategy was to consider sensor systems in industry ready for production and conduct an evaluation consisting of proposal analysis and field tests to select the winner. Only one proposal was received. A Candidate Evaluation Test (CET) was conducted from August 1988 to May 1989. The candidate was unable to meet product specification on all requirements and the solicitation was terminated.

The U.S. Army Air Defense Artillery School reassessed the minimum GBS operational requirements and an update to the FAAD GBS market survey was performed. The market survey update indicated that there were at least eight sensors in industry capable of meeting the revised performance specification requirements.

In October, Firm Fixed Price (FFP) contracts of $250K were awarded to each of seven competitors for operator training and range support during the Source Selection Evaluation Test (SSET). SSET pilot testing began on November 30, 1990. SSET was completed March 12, 1991. SSET data reduction, authentication, and analysis were

7a. (U) Program Highlights (Cont'd):

completed in May 1991. The results, including operational trials, were formally presented to the Source Selection Evaluation Board (SSEB), and Source Selection Acquisition Council (SSAC) in June 1991.

The Army NCTR Program evolved through a collaborative effort between several Army laboratories, the Navy, the Air Force, and the user community. Army management of the NCTR program transitioned from the PEO, Air Defense, to the PEO, Intelligence and Electronic Warfare in FY 90.

The elimination of a number of candidate host platforms and the resultant reductions in funding for the NCTR programs have caused schedule stretchouts and milestone threshold breaches. The only technology currently funded and in development is NCTR-1 (AN/VSX-2()).

b. (U) Significant Developments Since Last Report --

The SAR submission in 1991 and prior reflected FAAD C2 requirements that included software development through the objective system, a wedge for P3I, and procurement funding for 35 fielded units. The costs reported were supported by the Project Office current estimate and the Army Cost Position as adjusted for FYDP funding streams.

The FAAD C2I program is now structured in a block format which groups software versions 1-3 and OPA funds to support fielding to 3 light and special divisions and a training base as block I; software version 4 and OPA funds to support fielding to the remaining 15 units and retrofit Block I fielded units as Block II; software version 5 as Block III and P3I.

A revised baseline that includes Block III will be submitted for total program requirements based on the recommendations of the Air Defense Requirements Study, the ongoing Data Distribution Study, and a cost and operational effectiveness analysis (COEA) on the proposed Block II and III architectures and major alternatives by direction of the Deputy Under Secretary of Defense Acquisition memorandum dated 11 Jan 93.

On 11 Jan 93, OSD approved a revised acquisition strategy for the FAAD C2I program. A Low Rate Initial Production (LRIP) decision to procure and field a Block I FAAD C2I capability to three Light and Special Divisions and to procure sufficient test articles for the Initial Operational Test and Evaluation (IOT&E) was delegated to the Army Acquisition Executive from a Defense Acquisition Board (DAB) level decision. Additionally, the concept of a Limited User Test instead of a more expensive IOT&E to support an operational

7b. (U) Program Highlights (Cont'd):

assessment was approved. By further direction by the Army Acquisition Executive (AAE) the LRIP decision has been delegated to the PEO.

In compliance with further OSD direction a revised Acquisition Program Baseline (APB) for Blocks I and II only was approved by the Army 28 January 1993 and DOD 13 May 93. GBS and NCTR were included as enhancements to the FAAD C2 program.

On 27 February 1992, Hughes Aircraft Company of Fullerton, CA was awarded the FAAD Ground Based Sensor "best value" contract. Hughes Aircraft was awarded a $26.3M increment of a $61.7M firm fixed price contract option for 6 pre-production units. Total value of the contract, if all options (148 production units) are exercised, would be $452.4M. The first of 6 pre-production units are scheduled to be delivered in June 1993.

The AN/VSX-2 system design being developed by Magnavox, Fort Wayne, IN, is now complete, and the breadboard is in final integration. Pre-Production prototypes are due for development testing starting in June 1993. The field test program includes combined technical testing and Limited User Test (LUT) and is still on schedule for Oct 1993.

Due to the problems encountered with the initial design, the model 2 development of the AN/VSX-2 has been delayed. The schedule changes are highlighted in section 9.

The FAAD C2I program is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
Budget reductions in FY94 RDTE and OPA impact FAAD C2 development 1 to 2 years and delays procurement for fielding units. FAAD C2I program has been restructured to a Block I and Block II format as a result of the approved APB May 13, 1993.

8. (U) Threshold Breaches:
There are no breaches to the Approved Acquisition Program Baseline (APB) dated May 14, 1993. There is a Program Acquisition Unit Cost Nunn-McCurdy Breach as a result of a quantity decrease to be procured and fielded to the Army. This is caused by the Army downsizing and restructure. The unit cost breach against the current unit cost reporting baseline for FAAD C2, GBS, and NCTR is provided in the attachment. Since the program has been restructured from three to two end items, there is no breach shown against the two new end items in section 12.

9. (U) Schedule:
Block I (Light Division)

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate	
Required OP Capability (ROC) Approved	N/A	OCT 85	OCT 85	
Milestone II DAB	AUG 86	JUL 86	JUL 86	
Contract Award	SEP 86	SEP 86	SEP 86	
ROC Amended (USAADASCH, Ft Bliss)	N/A	APR 92	APR 92	
Block I DT	N/A	NOV 92	NOV 92	
Block I Limited User Test (LUT)				
Start	N/A	JAN 93	JAN 93	
Complete	N/A	FEB 93	FEB 93	
AAE LRIP Decision	N/A	MAY 93	MAY 93	
First Unit Equipped	JUN 91	SEP 93	SEP 93	
Organic Support Capability	N/A	SEP 93	SEP 93	
LSDIS Enhancement	N/A	OCT 93	OCT 93	
Initial Operational Capability	N/A	SEP 94	SEP 94	
Depot Support Capability	N/A	SEP 96	SEP 96	
C2I/Fire Unit Tech Test				
Start	SEP 90	N/A	N/A	(Ch-1)
Complete	JUN 91	N/A	N/A	(Ch-1)

b. (U) Previous Change Explanations --

The Schedule milestones applicable to GBS and NCTR have been removed and replace by milestones which specify these two programs as enhancements to the FAAD C2 program. Non-ADCCS managed milestones were removed by the approved APB. There are no changes to milestone dates from the previous SAR.

c. (U) Current Change Explanations --

(Ch-1) C2I Fire Unit Tech Test renamed to FAAD C2 Block I Development Test (DT) and is reported as such.

d. (U) References --

(U) Development Estimate:
SDDM, August 14, 1986

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

9d. (U) Schedule (Cont'd):
Block II (Heavy Division)

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate	
Milestone II	AUG 86	JUL 86	JUL 86	
Contract Award	SEP 86	AUG 92	AUG 92	
CDR Complete	N/A	JUN 93	JUN 93	
Block II DT				
Start	N/A	JUN 94	JUN 94	
Complete	N/A	JUL 94	JUL 94	
IOT&E				
Start	N/A	OCT 94	OCT 94	
Complete	N/A	NOV 94	NOV 94	
Milestone III (Full Scale Production)	N/A	MAR 95	MAR 95	
First Unit Equipped	N/A	AUG 95	AUG 95	
First Production Delivery	N/A	JUN 96	JUN 96	
Initial Operational Capability	N/A	AUG 96	AUG 96	
Organic Support Capability	N/A	JUN 96	JUN 96	
Depot Support Capability	N/A	SEP 96	SEP 96	
GBS Enhancement	N/A	AUG 95	AUG 95	
NCTR Enhancement	N/A	DEC 97	DEC 97	
GROUND BASED SENSOR				
Milestone IIIA	JUL 86	N/A	JUL 86	
LRIP Option Contract Award	JUN 88	N/A	N/A	(Ch-1)
Candidate Evaluation Test Contract Award	AUG 88	N/A	SEP 90	
Candidate Test & Proposal Evaluation Complete	MAR 89	N/A	DEC 91	
Contract Award (Pre-Production)	MAY 89	N/A	FEB 92	
(b)(1)				
Pre-Prod Deliveries Start	APR 91	N/A	N/A	(Ch-1)
Tech Test				
Start	MAY 91	N/A	N/A	(Ch-1)
Complete	OCT 91	N/A	N/A	(Ch-1)
IOT&E				
Start	NOV 91	N/A	N/A	(Ch-1)
Complete	DEC 91	N/A	N/A	(Ch-1)
Full Rate Production DAB Review	JAN 92	N/A	N/A	(Ch-1)
LRIP Deliveries Start	JAN 92	N/A	N/A	(Ch-1)
Full Rate Production Contract Award	FEB 92	N/A	N/A	(Ch-1)
Full Rate Production Deliveries Start	MAY 93	N/A	N/A	(Ch-1)
First Unit Equipped (Pre-Prod)	JUN 93	N/A	N/A	(Ch-1)
(b)(1)				

9a. (U) Schedule (Cont'd):
Block II (Heavy Division)

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
NCTR-1			
Contract Award (FSD)	JUL 90	N/A	MAR 91
Development Test			
Start	MAR 93	N/A	N/A (Ch-1)
Complete	JUN 93	N/A	N/A (Ch-1)
Pre-Prod Qual/Op Assess Test			
Start	JUN 93	N/A	N/A (Ch-1)
Complete	SEP 93	N/A	N/A (Ch-1)
Milestone IIIA	NOV 93	N/A	N/A (Ch-1)
LRIP Contract Award	FEB 94	N/A	N/A (Ch-1)
LRIP Deliveries Start	SEP 95	N/A	N/A (Ch-1)
Full Scale Prod Contract Award	APR 96	N/A	N/A (Ch-1)
First Unit Equipped	SEP 96	N/A	N/A (Ch-1)
NCTR-2			
Contract Award (FDS) (3 Competitors)	APR 90	N/A	AUG 90
Development Test			
Start	NOV 92	N/A	N/A (Ch-1)
Complete	NOV 93	N/A	N/A (Ch-1)
Pre-Prod Qual/Op Assess Test			
Start	FEB 93	N/A	N/A (Ch-1)
Complete	MAY 93	N/A	N/A (Ch-1)
Milestone IIIA	JUL 93	N/A	N/A (Ch-1)
LRIP Contract Award	OCT 93	N/A	N/A (Ch-1)
LRIP Deliveries Start	APR 95	N/A	N/A (Ch-1)
Full Scale Production Contract	NOV 95	N/A	N/A (Ch-1)
First Unit Equipped	NOV 95	N/A	N/A (Ch-1)
NCTR-4			
Contract Award (FSD)	AUG 88	N/A	N/A (Ch-1)
Development Test			
Start	MAY 90	N/A	N/A (Ch-1)
Complete	AUG 90	N/A	N/A (Ch-1)
Milestone IIIA	JAN 91	N/A	N/A (Ch-1)
LRIP Deliveries Start	FEB 93	N/A	N/A (Ch-1)
Ground Based Sensor Integration			
Start	FEB 92	N/A	N/A (Ch-1)
Complete	MAY 92	N/A	N/A (Ch-1)
First Unit Equipped	MAY 93	N/A	N/A (Ch-1)
Masked Target Sensor (MTS)			
Advanced Development			
Start	DEC 87	N/A	N/A (Ch-1)

9a. (U) Schedule (Cont'd):
Block II (Heavy Division)

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate	
Complete	DEC 90	N/A	N/A	(Ch-1)

b. (U) Previous Change Explanations --

The FSD C2 Build II contract slipped from June 1988 to January 1989 because the GFE was not available and because of budget reductions. This caused a corresponding slip to the FAAD C2 program. ASARC/JRMB changed from August 86 to July 86 to reflect accurate date. Schedule slippage of approximately 7 months due to funding constraints. The start of the IOT&E changed from July 92 to February 94, completion of IOT&E changed from March 93 to January 95, and FUE (CONUS) changed from June 93 to December 93 because of budget reductions. This program was restructured May 1990 by the AAE because of the changing threat environment and budget reductions. The restructured program will provide early development of a tailored FAAD C2 for fielding to light and special divisions impacting milestones FAAD C2 Block I Development Test (DT) (formerly "C2I FU Tech Test (LT)") and "FUE LT". The sensor LEWDD name was changed to LSDIS. FAAD C2 Block I DT was changed from Sep 92 to Oct 92 due to non-availability of LSDIS. Contract award of Version 4 changed from July 94 to July 92 due to limited heavy division capability being provided earlier. EUE Heavy Division was changed to Test, Analyze, and Fix. IOT&E Heavy Division was changed from May 97 - June 97 to February 95 - March 95 due to limited heavy division capability being provided earlier. IOC Light Division - September 94 was added by DA direction. Test, Analyze, and Fix - October 94 - January 95 was changed due to limited heavy division capability being provided earlier. IOC Heavy Division - November 96 was added due to limited heavy division capability being provided earlier.
The NCTR program reported 152 milestones as being either slipped, deleted, or advanced to an earlier date. Slipped milestones were caused by delays in contract award, and delays in the GBS contract award, increased prototype lead time, delayed test start dates, rquirements changes, risk reduction tasks being added, a new requirement for a MARB and extended testing, and unavailability of the host platform , design changes necessitated by "lessons learned" from Desert Storm, complications in data collection and delays in data reduction, replanning to buy force package 1 only, and drastic reductions in funding. Deleted milestones were caused by replacement with equivaent milestones which reflected refined testing plans. Milestones advanced to an earlier date were caused by parallel work, earlier availability of a host platform, earlier test starts, and schedule advancements to mesh with GBS schedules, and program

9b. (U) Schedule (Cont'd):
Block II (Heavy Division)
progress.

c. (U) Current Change Explanations --

(Ch-1) Milestones are no longer applicable.

d. (U) References --

(U) Development Estimate:
SDDM, August 14, 1986; ROC July 10, 1986; NCTR-1 Development Specification FAAD, Electronic Support Measures (ESM) NCTR System dated October 1990; NCTR-2 Development Specification FAAD, Non-Imaging Sensor, NCTR system dated May 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

10. (U) Performance Characteristics:
Block I (Light Division)

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Ao (Operational Availability	N/A	0.7	/ 0.6	TBD	.60-.70	
Target (non-maneuvering) positional accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path = Sensor --> C**2-->FU) (m) w/1 sigma	N/A	1340-3800 (x,y)	/ 1340-3800 (x,y)	TBD	1340-3800 (x,y)	
Initial track rpt delivery time to fire unit (sec)	N/A	15.0	/ 15.0	TBD	15	(CH-1)
Battle mgt info delivery speed to wpn syst (sec)	N/A	30	/ 30	TBD	30	

10a. (U) Performance Characteristics (Cont'd):
Block I (Light Division)

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Shelterized subsystem march order and emplacement 90% of time non-remoted equip (less SINCGARS remote antenna and JTIDS mast antenna) (min)	30	30 / 30	TBD	30	
MTBOMF (hrs)					
LSDIS	125	N/A / N/A	N/A	N/A	(CH-2)
Generator	425	N/A / N/A	N/A	N/A	(CH-2)

b. (U) Previous Change Explanations --

The Ao (Light Division) changed to reflect the approved Performance Characteristic. The name for Air Defense Sensor (Single) Light Early Warning Detection Device (LEWDD) was changed to Light & Special Division Interim Sensor (LSDIS).

c. (U) Current Change Explanations --

(Ch-1) Correction to match system specifications.

(Ch-2) Removed in accordance with the revised FAAD C2I APB dated 13 May 93.

d. (U) References --

(U) Development Estimate:
SDDM August 14, 1986.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

Block II (Heavy Division)

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate

10a. (U) Performance Characteristics (Cont'd):
Block II (Heavy Division)

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Operational Availability (Ao) range (w/o environ control unit/veh)	.84	.88 / .8	TBD	.84	
Target (non-maneuvering) positional accuracy reported to a Fire Unit (FU) with range of air def sensor inputs (Path-Sensor --> C**2--> FU) (m) w/1 sigma)	N/A	158-390 (x,y) 165-559 (z) / 204-449 (x,y) 257-4000 (z)	TBD	158-390 (x,y) 165-559 (z)	
Initial track rpt delivery time to fire unit (sec)	N/A	6.0 / 6.0	TBD	6.0	
Battle mgt info delivery speed to wpn syst (sec):					
Air Defense Warning	w/i 90	30 / 30	TBD	30	(CH-1)
Wpns Control Order	w/i 90	30 / 30	TBD	30	(CH-1)
Sensor Mgt	N/A	30 / 30	TBD	30	(CH-1)
Movement Order	N/A	64 / 64	TBD	64	(CH-1)
State of Alert	w/i 90	N/A / N/A	N/A	N/A	
Manual Acknowledgement of ABMO from time of receipt	w/i 90	N/A / N/A	N/A	N/A	
Correct target ID provided to FU (prob)	N/A	.90 / .90	TBD	.90	
Shelterized subsystem march order and emplacement 90% of time, non-remoted equip (less EPLRS and JTIDS mast antenna) (min)	w/i 30	30 / 30	TBD	30	
Identification Friend or Foe Methods	N/A	AWACS Procedural Mark XII NCTR / AWACS Procedural Mark XII	TBD	AWACS PROCEDURE,MARKXII,NCTR	

10a. (U) Performance Characteristics (Cont'd):
Block II (Heavy Division)

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Simultaneous Air Vehicle Track & Display @ ABMOC	N/A	210	/ 100	TBD	210	
Report Targets in AO (%)	N/A	85	/ 85	TBD	85	
MTBOMF (hrs)						
Air Defense Sensor (Single) Ground Based Sensor	125	N/A	/ N/A	N/A	N/A	(CH-1)
Generator	425	N/A	/ N/A	N/A	N/A	(CH-1)
ABMOC or AME C2 subsystems	184	N/A	/ N/A	N/A	N/A	
Manpower Threshold	626	N/A	/ N/A	N/A	N/A	
MTTR (hrs)						
Subsystem	.5	N/A	/ N/A	N/A	N/A	
Sensor	2.0	N/A	/ N/A	N/A	N/A	
ABMOC/C2 Node 90% of time will be capable of:		N/A	/ N/A			
Target Correlation rpts true position (km)	w/i 1 km	N/A	/ N/A	N/A	N/A	
Target Info to fire unit after report entry (sec)	w/i 12 sec	N/A	/ N/A	N/A	N/A	
Selection & Simultaneous Display of air track, ground situation, weapons, and special points of interest (%)	90	N/A	/ N/A	N/A	N/A	

GROUND BASED SENSOR

(b)(1) [redacted]

10a. (U) **Performance Characteristics (Cont'd):**
Block II (Heavy Division)

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):
Block II (Heavy Division)

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations --

The Ao for FAAD C2 (Light Division) reflects the approved Performance Characteristic. The name for Air Defense Sensor (Single) Light Early Warning Detection Device (LEWDD) was changed to Light & Special Division Interim Sensor (LSDIS).

c. (U) Current Change Explanations --

(Ch-1) Performance Characteristics no longer appropriate.

d. (U) References --

(U) Development Estimate:
SDDM, August 14, 1986; ROC July 10, 1986; NCTR-1 Development Specification FAAD, Electronic Support Measures (ESM) NCTR System dated October 1990; NCTR-2 Development Specification FAAD, Non-Imaging Sensor, NCTR system dated May 1989.

10d. (U) Performance Characteristics (Cont'd):
Block II (Heavy Division)

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
Block I (Light Division)

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	292.3	378.6	378.3
Procurement	34.4	10.1	10.0
Flyaway	(18.8)		(8.3)
Other Weapons System Costs	(14.6)		(1.7)
Peculiar Support	(1.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 87 Base-Year $	326.7	388.7	388.3
Escalation	23.0	28.1	28.1
Development (RDT&E)	(16.6)	(25.1)	(25.0)
Procurement	(6.4)	(3.0)	(3.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	349.7	416.8	416.4

PM SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for the FAAD C2I program, are included in both Block I and Block II current estimate.

b. (U) Quantity --			
Development (RDT&E)	0	0	1
Procurement	0	3	3
Total	0	3	4

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
SDDM, August 14, 1986

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11e. (U) Total Program Cost and Quantity (Cont'd):
Block I (Light Division)

Block II (Heavy Division)

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	435.0	338.4	364.1
Procurement	878.9	666.6	666.8
Flyaway	(595.3)		(384.9)
Other Weapon System Costs	(240.9)		(44.8)
Peculiar Support	(8.8)		(194.3)
Initial Spares	(33.9)		(42.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 87 Base-Year $	1313.9	1005.0	1030.9
Escalation	200.1	410.8	377.9
Development (RDT&E)	(30.8)	(127.4)	(94.7)
Procurement	(169.3)	(283.4)	(283.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1514.0	1415.8	1408.8
b. (U) Quantity --			
Development (RDT&E)	0	0	1
Procurement	0	19	14
Total	0	19	15

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
SDDM, August 14, 1986; ROC July 10, 1986; NCTR-1 Development Specification FAAD, Electronic Support Measures (ESM) NCTR System dated October 1990; NCTR-2 Development Specification FAAD, Non-Imaging Sensor, NCTR system dated May 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

Block I (Light Division)

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	416.4	478.8	416.4
(2) Quantity	4	4	4
(3) Unit Cost	104.10	119.70	104.10
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	13.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	13.1
(2) Quantity			3
(3) Unit Cost	N/A	N/A	4.37

Block II (Heavy Division)

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1408.8	1627.6	1408.8
(2) Quantity	15	15	15
(3) Unit Cost	93.920	108.507	93.920
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity			
(3) Unit Cost	N/A	N/A	N/A

The current year baseline that was established in the December 1991 SAR was based on three separate end items, FAAD C2, GBS, and NCTR. A comparison of the current estimate against the three respective current year baselines is shown in the attachment. This comparison shows a program acquisition unit cost breach (Nunn-McCurdy) due to the reduction divisions scheduled for deployment. The information shown above establishes unit cost baselines for two new end items, the Block I and the Block II, starting with the budget year (i.e., FY 94) (see above). These new end items are replacing the FAAD C2, GBS, and NCTR end items.

13. (U) **Cost Variance Analysis:**
Summary - All end items

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	774.7	1089.0	0.0	1863.7
Previous Changes:				
Economic	-24.3	+31.4	-	+7.1
Quantity	-	-77.2	-	-77.2
Schedule	+4.7	+73.7	-	+78.4
Engineering	-	-7.7	-	-7.7
Estimating	+178.3	+167.4	-	+345.7
Other	-	-	-	-
Support	-	-103.6	-	-103.6
Subtotal	+158.7	+84.0	-	+242.7
Current Changes:				
Economic	-1.9	-39.0	-	-40.9
Quantity	-13.8	-146.6	-	-160.4
Schedule	-6.4	+7.8	-	+1.4
Engineering	-	-	-	-
Estimating	-71.4	-195.2	-	-266.6
Other	-	-	-	-
Support	+22.2	+163.1	-	+185.3
Subtotal	-71.3	-209.9	-	-281.2
Total Changes	+87.4	-125.9	-	-38.5
Current Estimate	862.1	963.1	-	1825.2

13a. (U) Cost Variance Analysis (Cont'd):
Summary - All end items
a. (U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	727.3	913.3	0.0	1640.6
Previous Changes:				
Quantity	-	-55.8	-	-55.8
Schedule	-0.1	+19.0	-	+18.9
Engineering	-	-3.7	-	-3.7
Estimating	+62.1	+27.8	-	+89.9
Other	-	-	-	-
Support	-	-128.7	-	-128.7
Subtotal	+62.0	-141.4	-	-79.4
Current Changes:				
Quantity	-10.4	-88.1	-	-98.5
Schedule	-4.8	-	-	-4.8
Engineering	-	-	-	-
Estimating	-45.8	-115.4	-	-161.2
Other	-	-	-	-
Support	+14.1	+108.4	-	+122.5
Subtotal	-46.9	-95.1	-	-142.0
Total Changes	+15.1	-236.5	-	-221.4
Current Estimate	742.4	676.8	-	1419.2

13a. (U) Cost Variance Analysis (Cont'd):
Block I (Light Division)

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	308.9	40.8	0.0	349.7
Previous Changes:				
Economic	-15.0	+1.7	-	-13.3
Quantity	-	-	-	-
Schedule	-1.6	-	-	-1.6
Engineering	-	-	-	-
Estimating	+114.2	-9.7	-	+104.5
Other	-	-	-	-
Support	-	-16.6	-	-16.6
Subtotal	+97.6	-24.6	-	+73.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.2	-3.8	-	-7.0
Other	-	-	-	-
Support	-	+0.7	-	+0.7
Subtotal	-3.2	-3.1	-	-6.3
Total Changes	+94.4	-27.7	-	+66.7
Current Estimate	403.3	13.1	-	416.4

13a. (U) Cost Variance Analysis (Cont'd):
Block I (Light Division)

a. (U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	292.3	34.4	0.0	326.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-1.5	-	-	-1.5
Engineering	-	-	-	-
Estimating	+68.8	-0.1	-	+68.7
Other	-	-	-	-
Support	-	-14.5	-	-14.5
Subtotal	+67.3	-14.6	-	+52.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+18.7	-10.4	-	+8.3
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	+18.7	-9.8	-	+8.9
Total Changes	+86.0	-24.4	-	+61.6
Current Estimate	378.3	10.0	-	388.3

The method of presenting FAAD C2I data has been revised. The program is now being displayed as Blocks I & II in separate presentations.

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation indices.
Schedule: Revised schedule.
Estimating: Changes in previous SAR have been prorated between Block I and Block II and include changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, and program restructures.

13b. (U) Cost Variance Analysis (Cont'd):
Block I (Light Division)

Procurement
Economic: Revised escalation indices.
Schedule: Revised schedule.
Estimating: Changes in previous SAR have been prorated between Block I and Block II and include changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, program restructures, and delayed deployments.

Support

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Program adjustments attributed to reductions in President's Budget. (Estimating)	+18.7	-3.2
RDT&E Subtotal	+18.7	-3.2
(2) Procurement		
Program Adjustment Attributed to Reduction in President's Budget. (Estimating)	-9.8	-3.1
Adjustment to reconcile Fly-Away (Support)	+0.6	+0.7
Adjustment to reconcile Fly-Away (Estimating)	-0.6	-0.7
Procurement Subtotal	-9.8	-3.1

13a. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	465.8	1048.2	0.0	1514.0
Previous Changes:				
Economic	-9.3	+29.7	-	+20.4
Quantity	-	-77.2	-	-77.2
Schedule	+6.3	+73.7	-	+80.0
Engineering	-	-7.7	-	-7.7
Estimating	+64.1	+177.1	-	+241.2
Other	-	-	-	-
Support	-	-87.0	-	-87.0
Subtotal	+61.1	+108.6	-	+169.7
Current Changes:				
Economic	-1.9	-39.0	-	-40.9
Quantity	-13.8	-146.6	-	-160.4
Schedule	-6.4	+7.8	-	+1.4
Engineering	-	-	-	-
Estimating	-68.2	-191.4	-	-259.6
Other	-	-	-	-
Support	+22.2	+162.4	-	+184.6
Subtotal	-68.1	-206.8	-	-274.9
Total Changes	-7.0	-98.2	-	-105.2
Current Estimate	458.8	950.0	-	1408.8

13a. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

a. (U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	435.0	878.9	0.0	1313.9
Previous Changes:				
Quantity	-	-55.8	-	-55.8
Schedule	+1.4	+19.0	-	+20.4
Engineering	-	-3.7	-	-3.7
Estimating	-6.7	+27.9	-	+21.2
Other	-	-	-	-
Support	-	-114.2	-	-114.2
Subtotal	-5.3	-126.8	-	-132.1
Current Changes:				
Quantity	-10.4	-88.1	-	-98.5
Schedule	-4.8	-	-	-4.8
Engineering	-	-	-	-
Estimating	-64.5	-105.0	-	-169.5
Other	-	-	-	-
Support	+14.1	+107.8	-	+121.9
Subtotal	-65.6	-85.3	-	-150.9
Total Changes	-70.9	-212.1	-	-283.0
Current Estimate	364.1	666.8	-	1030.9

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised economic indices.
Schedule: Revised schedule.
Estimating: Changes in previous SAR have been prorated between Block I and Block II and include changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, and program restructures.

Procurement
Economic: Revised economic escalation indices.
Quantity: Decrease in fielded units.

13b. (U) Cost Variance Analysis (Cont'd):

Block II (Heavy Division)

Schedule: Reschedule of GBS procurement program.

Estimating: Quantity allocations and non-award of contract. Changes in previous SAR have been prorated between Block I and Block II and include changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, program restructures, and delayed deployments.

Support: Other weapons systems cost associated with NCTR.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-1.9
Deletion of need for prototypes and tooling for discontinued NCTR programs. (Quantity)	-10.4	-13.8
Change in NCTR procurement buy schedule. (Schedule)	-4.8	-6.4
Block III Program deleted (Estimating)	-64.5	-68.2
Increase required for extended NCTR software development to target signature library. (Support)	+14.1	+22.2
RDT&E Subtotal	-65.6	-68.1
(2) Procurement		
Revised economic escalation indices. (Economic)		-39.0
Fielding quantities reduced by 16 as a result of Army downsizing. (Quantity)	-88.1	-146.6
Schedule change for delay of procurement of funding of one year.(GBS) (Schedule)	--	+7.8
Quantity and contract adjustments. (Estimating)	-203.0	-339.0
Other weapons systems cost and initial spares adjustmenst for reduction in quantity and funding. (Support)	+210.5	+317.0
Adjustment to reconcile Fly-Away. (Support)	-102.7	-154.6

13c. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

	(Dollars in Millions) Base-Year	Then-Year
Adjustment to reconcile Fly-Away. (Estimating)	+98.0	+147.6
Procurement Subtotal	-85.3	-206.8

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Block I (Light Division)
(U) Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	—	—	—	—	—	—	—	—	104.100

Block II (Heavy Division)
(U) Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	—	—	—	—	—	—	—	—	93.920

15. (U) Contract Information (Then-Year Dollars in Millions):

		Initial Contract Price	
a.(U) RDT&E — (U) FAAD C2I SYS INTEGRATION:	Target	Ceiling	Qty
TRW DEFENSE SYS GROUP, REDONDO BEACH, CA DAAH01-86-C-A065, CPIF Award: September 1, 1986 Definitized: N/A	$58.1	N/A	0

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$175.6	N/A	0	$175.2	$175.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-10.4	$-4.6
Cumulative Variances To Date (03/02/93)	$0.2	$-0.3
Net Change	$10.6	$4.3

Explanation of Change:

The FAAD C2 contract information is March 1993 data reported by the contractor in the April 1993 Cost Performance Report. There is a slight positive cumulative cost variance ($.196M) as a result of underruns in the System/Program Management WBS. There is a slight negative cumulative schelule variance ($.311M) due primarily to delays in government testing. Recovery of all schelule delays is anticipated by contract completion.

(U) Ground Based Sensor:
Hughes Aircraft Company, Fullerton, CA
DAAH01-91-C-0002, FFP
Award: February 27, 1992
Definitized: February 27, 1992

Initial Contract Price		
Target	Ceiling	Qty
$61.7	$0.0	6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$59.7	$0.0	6	$59.7	$59.7

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 48.3% (14 yrs/29 yrs)

(2) Percent Program Cost Appropriated: 34.2% ($625.1 / $1825.2)

16b. (U) Program Funding Summary (Cont'd):
Block I (Light Division)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Block I (Light Division)

Appropriation	Prior Years (FY80-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	402.3	1.0	-	-	403.3
Procurement	-	13.1	-	-	13.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	402.3	14.1	-	-	416.4

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Block II (Heavy Division)

Appropriation	Prior Years (FY87-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2008)	Total
RDT&E	222.3	61.0	61.4	114.1	458.8
Procurement	0.5	-	152.7	796.8	950.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	222.8	61.0	214.1	910.9	1408.8

16c. (U) Program Funding Summary (Cont'd):
Block I (Light Division)

c. (U) Annual Summary -- Block I (Light Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1980				4.1	3.0	3.0	2.9	5.9
1981				12.3	10.0	10.0	9.7	6.1
1982				15.2	13.2	13.1	12.8	7.6
1983				1.1	1.0	1.0	1.0	4.9
1984				33.3	31.2	31.2	30.7	3.8
1985				18.7	18.1	18.1	15.5	3.4
1986				20.2	20.1	20.1	19.3	2.8
1987				36.4	37.2	37.2	33.2	2.7
1988				52.1	55.2	55.2	50.6	3.0
1989				60.2	66.3	66.0	52.0	4.2
1990				40.5	46.3	46.3	45.1	4.0
1991				46.9	55.8	55.7	54.5	4.3
1992				25.7	31.4	31.4	29.9	2.8
1993				10.8	13.5	13.5	13.5	2.4
1994				0.8	1.0			2.4
Subtot	1			378.3	403.3	401.8	370.7	

16c. (U) Program Funding Summary (Cont'd):
Block I (Light Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army								
1994	3		8.3	10.0	13.1			2.4
Subtot	3		8.3	10.0	13.1			
Grand Total	4		8.3	388.3	416.4	401.8	370.7	

c. (U) Annual Summary -- Block II (Heavy Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1987				4.4	4.5	4.5	4.5	2.7
1988				31.0	32.8	32.8	32.8	3.0
1989				35.0	38.5	37.7	37.3	4.2
1990				19.4	22.2	21.4	20.6	4.0
1991				6.9	8.2	8.2	7.7	4.3
1992				46.0	56.1	55.9	33.8	2.8
1993				48.0	60.0	40.7	0.9	2.4
1994				47.7	61.0			2.4

16c. (U) **Program Funding Summary (Cont'd):**
Block II (Heavy Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1995				47.0	61.4			2.3
1996				14.7	19.7			2.3
1997				13.4	18.3			2.2
1998				12.5	17.4			2.2
1999				1.5	2.2			2.2
2000				7.6	11.1			2.2
2001				12.1	18.1			2.2
2002				4.0	6.1			2.2
2003				2.2	3.5			2.2
2004				2.2	3.5			2.2
2005				2.2	3.5			2.2
2006				2.1	3.5			2.2
2007				2.1	3.5			2.2
2008				2.1	3.7			2.2
Subtot	1			364.1	458.8	201.2	137.6	

16c. (U) Program Funding Summary (Cont'd):
Block II (Heavy Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army								
1990				0.4	0.5			4.0
1991								4.3
1992								2.8
1993								2.4
1994								2.4
1995	2	6.1	82.5	114.3	152.7			2.3
1996	3	1.8	61.8	89.0	121.5			2.3
1997	4	1.7	59.9	94.1	131.3			2.2
1998	4	0.9	58.7	96.0	136.9			2.2
1999		0.6	52.1	90.5	131.9			2.2
2000	1	0.6	58.2	113.3	168.7			2.2
2001				40.8	62.1			2.2
2002				20.6	32.0			2.2
2003				5.5	8.7			2.2
2004				2.3	3.7			2.2
Subtot	14	11.7	373.2	666.8	950.0			
Grand Total	15	11.7	373.2	1030.9	1408.8	201.2	137.6	

17. (U) Production Rate Data:

Block I (Light Division)

a. (U) Production Baseline Rate

FAAD C2 system hardware will be procured from the Common Hardware Software (CHS) and SAIC contracts managed by PM Common Hardware Software. Both contracts are for non-developmental items. The steady state full production rate for the CHS contract is identified as 200 units per month. The steady state full production rate for the SAIC contract is 300 units per month. Annual production rates for both contracts are determined based on the combined requirements of all the Automated Tactical Command and Control Systems (ATCCS) programs.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		13.1		N/A	N/A
Procurement Qty		3		N/A	N/A
Proc. Unit Cost	N/A	4.367	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

Block II (Heavy Division)

a. (U) Production Baseline Rate

FAAD C2 system hardware will be procured from the Common Hardware Software (CHS) and SAIC contracts managed by PM Common Hardware Software. Both contracts are for non-developmental items. The steady state full production rate for the CHS contract is identified as 200 units per month. The steady state full production rate for

17a. (U) Production Rate Data (Cont'd):
Block II (Heavy Division)
the SAIC contract is 300 units per month. Annual production rates for both contracts are determined based on the combined requirements of all the Automated Tactical Command and Control Systems (ATCCS) programs.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		152.7		N/A	N/A
Procurement Qty		2		N/A	N/A
Proc. Unit Cost	N/A	76.350	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		796.8		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
Block I (Light Division)

a. (U) Assumptions and Ground Rules --

4 FAAD C2 Block I units will be fielded and sustained for 20 years from date of fielding. There is no antecedent.

18b. (U) Operating and Support Costs (Cont'd):
Block I (Light Division)

b. (U) Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 2.6	Avg Annual Cost Per n/a
Total O & S Consumable	2.6	N/A
Total	2.6	N/A

c. (U) Contractor Support Costs -- None.

Block II (Heavy Division)

a. (U) Assumptions and Ground Rules --

19 units will be fielded and sustained for 20 years from date of fielding. Operational availability of the peace time tactical systems is targeted as 8.0 hours per day, 7 days a week (training system 8.0 hours per day 5 days a week). Fielding costs include costs for field training services, transportation and initial repair parts. Sustainment costs include personnel costs and costs for labor and materials needed for system maintenance and overhaul. Also included are repair of component parts, installation of modifications, provision of replenishment spares and repair parts, and replenishment training. There is no antecedent system.

b. (U) Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 10.3	Avg Annual Cost Per N/A
Total O&S	10.3	N/A
Total	10.3	N/A

c. (U) Contractor Support Costs -- None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

FAAD C2

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	690.6	781.9	*
(2) Quantity	19	35	*
(3) Unit Cost	36.347	22.340	*
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	*
Less CY Adv Proc	0.0	0.0	*
Plus PY Adv Proc	0.0	0.0	*
Net Total	0.0	0.0	*
(2) Quantity	0	0	*
(3) Unit Cost	N/A	N/A	*

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY87$)	589.3	642.0	*
(2) Unit Cost	31.016	18.343	*
d. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (BY87$)	0.0	0.0	*
Less CY Adv Proc	0.0	0.0	*
Plus PY Adv Proc	0.0	0.0	*
Net Total	0.0	0.0	*
(2) Unit Cost	N/A	N/A	*

e. (U) Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	14.007	62.70
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-16	-45.71
(4) PAUC (BY87$)	12.673	69.09
(5) CPUC (BY87$)	0.000	N/A

* The unit cost baseline for the budget year is shown in section 12 of this report. FAAD C2, GBS, and NCTR will no longer be reported as separate end items.

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

FAAD C2

f. (U) Changes from the Previous SAR - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	14.007	62.70
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-16	-45.71
(4) PAUC (BY87$)	12.673	69.09
(5) CPUC (BY87$)	0.000	N/A

g. (U) Initial SAR (DEC 87)
(1) Program Acquisition Cost (TY$) -- 1501.7
(2) Program Acquisition Cost (BY$) -- 1287.4

(U) The Budget Year UCR Baseline column reflects the total for FAAD C2I System including FAAD C2, GBS and NCTR.

h. (U) Unit Cost Changes.

(1) (U) PAUC --

The restructured APB reduced the quantity of divisions for deployment from 35 to 19 after the research and development effort has primarily been completed and the cost is sunk.

(2) (U) CPUC -- None.

i. (U) Impact of Performance or Schedule Changes on Unit Cost. - None.

j. (U) Program Management and Control. - None.

k. (U) Cost Control Actions. - None.

l. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): TRW DEFENSE SYS GROUP
(2) Contract Title: FAAD C2I SYS INTEGRATION
(3) Contract Number:DAAH01-86-C-A065
(4) Actual Cost of Work Performed (ACWP) to date: 166.6
(5) Percent contract completed (BCWP/target cost): 0.96

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

FAAD C2

(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/92	$-11.2/+6.40%	$-3.9/+2.20%
Previous SAR	N/A	N/A
Current values	$-0.1/+0.10%	$-0.6/+0.30%
Change from the baseline SAR	$+11.1/-6.30%	$+3.3/-1.90%
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

The cumulative negative cost variance of $.097M and the cumulative negative schedule variance of $.573M were primarily due to the Government not completing Force Development Test and Evaluation on schedule. This test is now complete and the negative variances are expected to be reversed prior to contract completion.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): Hughes Aircraft Company
(2) Contract Title: Ground Based Sensor
(3) Contract Number:DAAH01-91-C-0002
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): N/A
(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of ??/??/??	N/A	N/A
Previous SAR	N/A	N/A
Current values	N/A	N/A
Change from the baseline SAR	N/A	N/A
Change from the previous SAR	N/A	N/A

(7) (U) Explanation of Variances. - None.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

GROUND BASED SENSOR

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	694.2	871.4	*
(2) Quantity	123	165	*
(3) Unit Cost	5.701	5.281	*
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	*
Less CY Adv Proc	0.0	0.0	*
Plus PY Adv Proc	0.0	0.0	*
Net Total	0.0	0.0	*
(2) Quantity	0	0	*
(3) Unit Cost	N/A	N/A	*

NCTR

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	440.4	435.1	*
(2) Quantity	0	0	*
(3) Unit Cost	N/A	N/A	*
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	*
Less CY Adv Proc	0.0	0.0	*
Plus PY Adv Proc	0.0	0.0	*
Net Total	0.0	0.0	*
(2) Quantity	0	0	*
(3) Unit Cost	N/A	N/A	*

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

* The unit cost baseline for the budget year is shown in section 12 of this report. FAAD C2, GBS, and NCTR will no longer be reported as separate end items.

AF-1 ACM

~~SECRET~~

92 C74

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: ACM (AGM-129)

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 1.1.1993; 10
DIRECTORATE FOR FREEDOM OF INFORMATIC AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
AGM-129/Advanced Cruise Missile (ACM)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:
Aeronautical Systems Center ASC/VC
Advanced Cruise Missile (ACM)
Program Office
WPAFB, OH 45433-6503
COL WILLIAM F. PYTLIK
Assigned: September 21, 1992
AV 785-7885 COMM (513) 255-7885

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603001F
PROCUREMENT:
APPN 3010 ICN AGM129A (Air Force)
APPN 3020 ICN AGM129A (Air Force)
MILCON:
PE 0101120F

SAF/PAS
93-304 -T

~~Classified by: AGM-SPO, dtd 01-May-1991~~
~~Declassify on: OADR~~
~~Exempt from General Declassification Schedule of Executive Order 11652 Exemption Category: Not Subject to Automatic Downgrade~~

~~SECRET~~

OASD(PA) DFOISR 93-M-455

5. (U) Related Programs:

(U) F112 Engine, B-52 ACM Integration (PE11113F), B-1 Integration (PE11126F), Common Strategic Rotary Launcher (PE63258F).

(b)(1)

[redacted]

7. (U) Program Highlights:

(b)(1)

[redacted]

(b)(1)

(b)(1)

(U) DT&E/IOT&E is complete. FOT&E was initiated by HQ ACC in November 1990. Thirteen (13) FOT&E flights have occurred with one flight failures.

(U) In April 1992, the Air Force request to use FY92 funds for the FY87/88 over target liability was disapproved. To avoid violation of the Anti-Deficiency ACT, ninety-six (96) FY87 missiles and twenty-four (24) FY88 missiles were terminated. A FY92 Letter Contract was awarded with the material terminated from the FY87/88 contract provided as Government Furnished Material. These actions reduced the total program quantity to 520 missiles. In May 92, Congress passed a bill rescinding $344 million of the FY92 ACM Budget. To maximize the quantity of missiles fielded and also ensure long term supportability, it was necessary to terminate additional production missiles. A restructure plan was approved to complete the production and support of 460 missiles. A total of 426 of the 460 missiles were delivered as of 14 May 1993.

(U) The MDMSC contracts for FY90/91 were definitized in June 1992.

(U) In August 1992, the sale of GD/C to Hughes Missile Systems Company (HMSC) was finalized.

b. (U) Significant Developments Since Last Report --
(U) In October 1992 an additional 24 FY88 missiles were terminated and provided as Government Furnished Material to the FY90 (Quantity of 15) and FY91 (Quantity of 9) contracts for completion. Also in October 1992, the original 25 FY90 and 35 FY91 missiles were terminated. A summary of the 460 missile restructure plan is: 10 FY85 HMSC missiles, 100 FY86 HMSC missiles, 54 FY87 HMSC missiles, 52 FY88 HMSC missiles, 15 FY90 HMSC and 50 FY90 MDMSC missiles, 9 FY91 HMSC and 50 FY91 MDMSC missiles, and 120 FY92 HMSC missiles.

(U) There have been two (2) FOT&E flights.

(U) HQ ACC identified the second MOB for the ACM which will be Minot AFB.

(U) A total of 253 missiles have been delivered to the government as of 30 Dec 92.

U) The ACM is expected to satisfy mission requirements.

7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --
(U) The FY87,88 and 90/91 contracts were restructured because of the cancellation of FY90/91 missiles and a shortage of funds associated with funding the FY87 and FY88 contracts to ceiling. Restructured contracts were signed in Feb 93.

(U) A total of 417 missiles have been delivered to the government as of 30 April 93. The ACM program is more than 90 percent in deliveries, this is the final SAR.

8. (U) Threshold Breaches:
(U) There are no breaches to the Acquisition Program Baseline (APB) dated 08 April 1993, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
FSD Contract Award/Start	APR 83	APR 83	APR 83
Preliminary Design Review (PDR)	SEP 84	SEP 84	SEP 84
Critical Design Review (CDR)	MAR 85	MAR 85	MAR 85
First Free Flight	JUL 85	JUL 85	JUL 85
Pilot Production Decision (Lot I PP)	JUL 85	JUL 85	JUL 85
Low Rate Initial Production Decision	JUL 86	JUL 86	JUL 86
Physical Configuration Audit (PCA)	FEB 88	FEB 88	FEB 88
Dual Source Qualification Option Exercise	N/A	MAY 88	MAY 88
Limited Nuclear Surety Inspection (LNSI)	SEP 88	AUG 88	SEP 88
Dual Source Milestone I - Mfg Validation	N/A	APR 89	APR 89
Dual Source Milestone II - Full Qualification	N/A	APR 90	APR 90
ACM/B-52 DT&E/IOT&E Completion	N/A	MAY 90	JUL 90
Full Rate Production Decision (Lot V)	SEP 88	JUN 90	JUL 91
Dual Source Milestone III - Final Qual Del	N/A	AUG 90	FEB 91
Functional Configuration Audit (FCA)	JUN 89	SEP 90	NOV 90

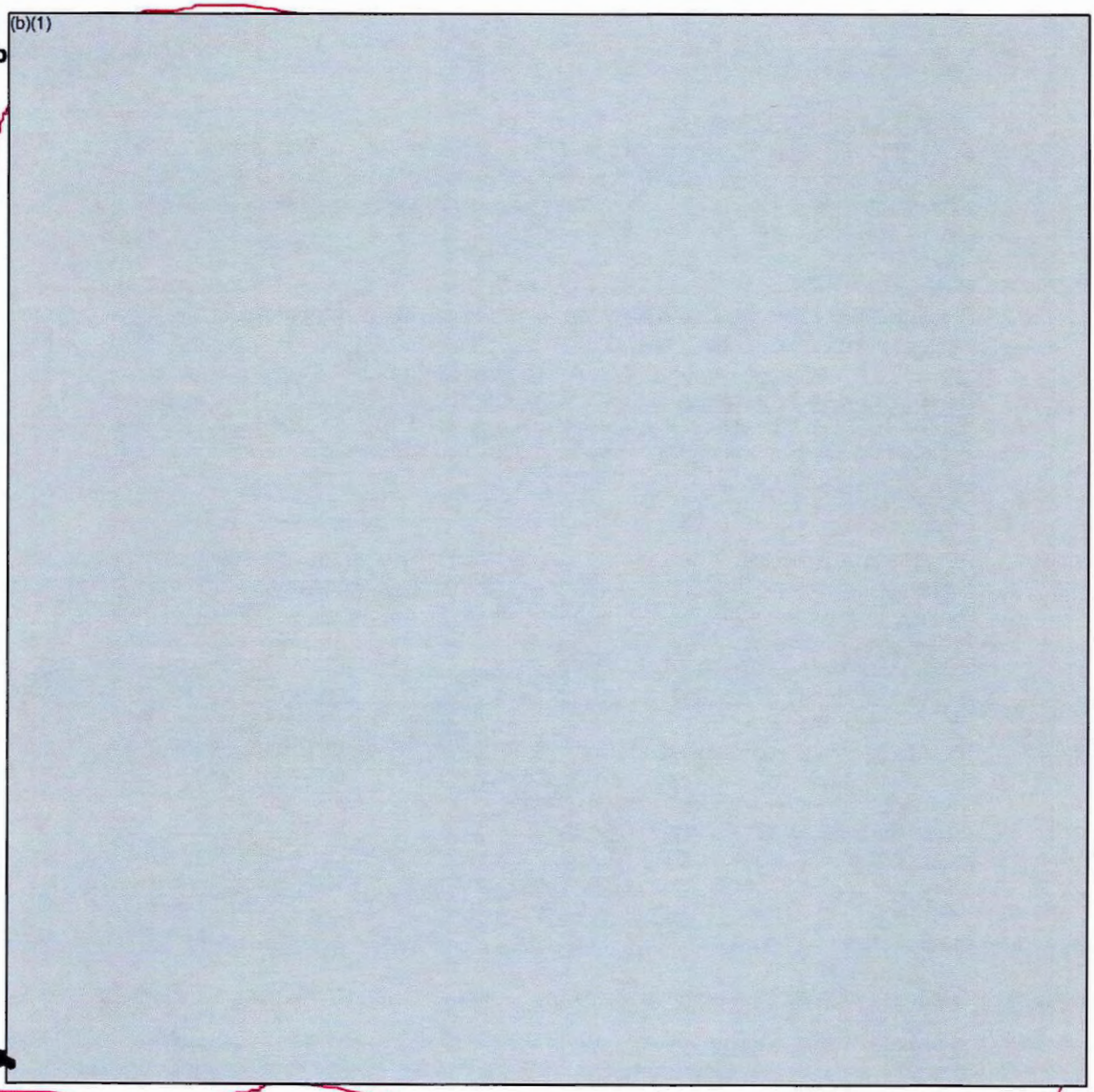
(b)(1)

b. (U) Previous Change Explanations --

(b)(1)

(b)(1)

9b



d. (U) References --

(U) Production Estimate:

(1) (U) PMD3006(7), June 27, 1985

(2) (U) PMD3006(8), November 10, 1987

(3) (U) DEPSECDEF Memo: Low Rate Initial Production, (LRIP) July 21, 1986

(4) (U) SECDEF Briefing, November 9, 1987,

(5) (U) PMD3006(10), ACM Procurement Direction, April, 1987

9d. (U) Schedule (Cont'd):

(b)(1) [redacted]

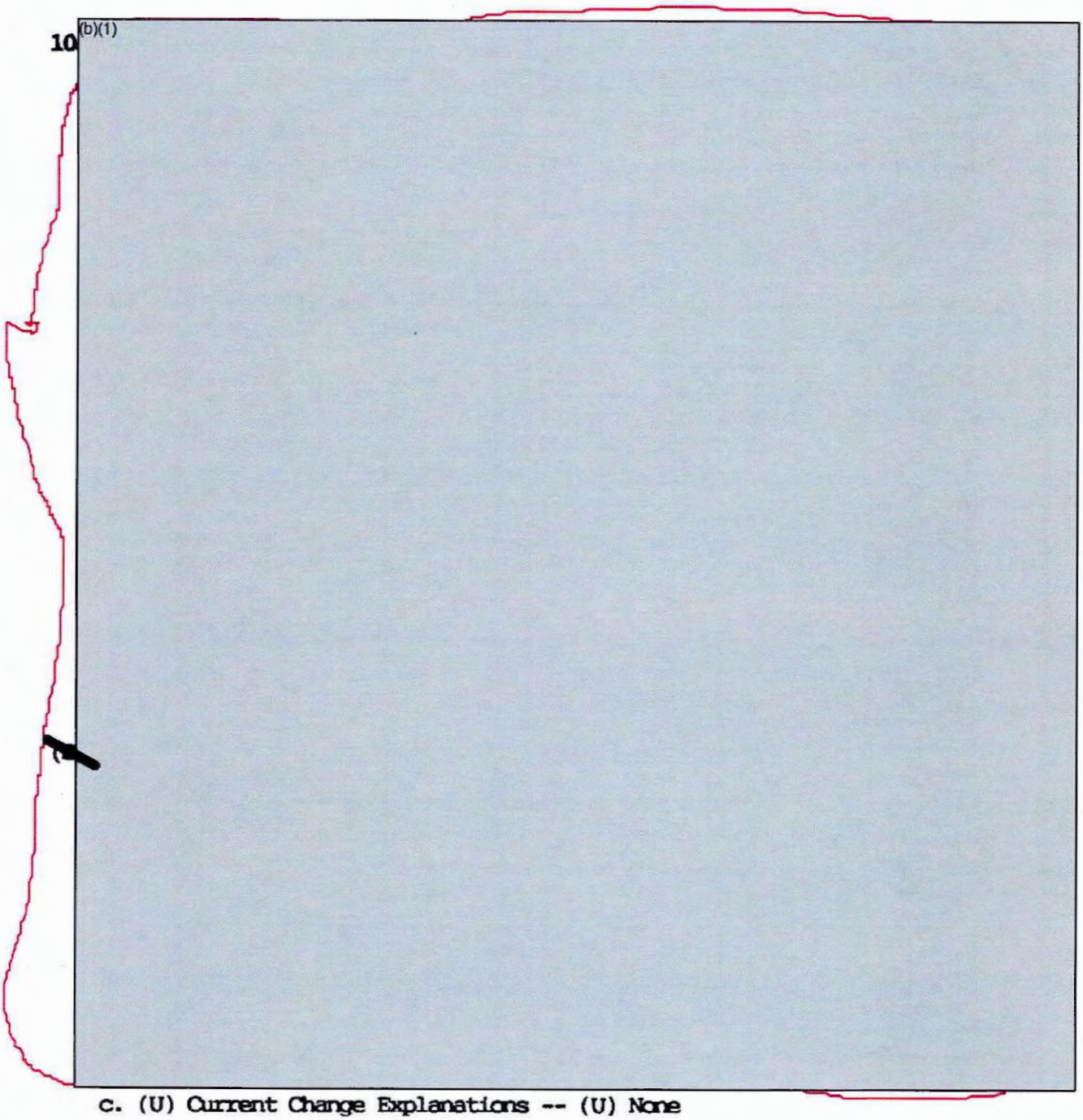
(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 08 April 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1) [redacted]				

10 (b)(1)



c. (U) Current Change Explanations -- (U) None

d. (U) References --

(U) Production Estimate:
(1) (U) PMD3006(7), June 27, 1985 ([redacted])
(2) (U) PMD3006(8), November 10, 1987 ([redacted])

10d. (U) Performance Characteristics (Cont'd):

(3) (U) DEPSECDEF Memo: Low Rate Initial Production, (LRIP) July 21, 1986 (S)
(4) (U) SECDEF Briefing, November 9, 1987, (S/SAR)
(5) (U) PMD3006(10), ACM Procurement Direction, April, 1987 (S)
(6) (U) PMD3006(11), Undated (S)

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 08 April 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1349.1	1474.5	1450.7
Procurement	3798.8	2381.8	2369.7
Missile Flyaway	(3157.9)		(2009.1)
A/C Integration	(112.8)		(109.8)
Total Flyaway	(3270.7)		(2118.9)
Other Wpn Sys Cost	(464.8)		(19.0)
Peculiar Support	(0.0)		(177.6)
Initial Spares	(63.3)		(54.2)
Construction (MILCON)	49.6	16.4	16.4
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year $	5197.5	3872.7	3836.8
Escalation	1467.9	994.1	965.6
Development (RDT&E)	(143.3)	(195.6)	(188.9)
Procurement	(1308.0)	(795.3)	(773.5)
Construction (MILCON)	(16.6)	(3.2)	(3.2)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	6665.4	4866.8	4802.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1461	460	460
Total	1461	460	460

(U) Excluded are twenty-five (25) R&D units that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- $979.9 Million

11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Production Estimate:
(1) (U) PMD3006(7), June 27, 1985 (S/SAR)
(2) (U) PMD3006(8), November 10, 1987 (S/SAR)
(3) (U) DEPSECDEF Memo: Low Rate Initial Production, (LRIP) July 21, 1986 (S)
(4) (U) SECDEF Briefing, November 9, 1987, (S/SAR)
(5) (U) PMD3006(10), ACM Procurement Direction, April, 1987 (S)
(6) (U) PMD3006(11), Undated (S)

(U) Approved Program:
AFAE Approved Acquisition Program Baseline dated 08 April 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(SEP 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	4802.4	4829.6	4802.4
(2) Quantity	460	460	460
(3) Unit Cost	10.440	10.499	10.440
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	99.0	99.0	59.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	16.5	16.5	0.0
Net Total	115.5	115.5	59.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1492.4	5106.8	66.2	6665.4
Previous Changes:				
Economic	-0.2	+194.7	-0.4	+194.1
Quantity	-	-2481.0	-	-2481.0
Schedule	-	+226.6	-	+226.6
Engineering	-14.9	+9.2	-	-5.7
Estimating	+122.7	+398.5	-46.2	+475.0
Other	-	-	-	-
Support	+32.9	-277.7	-	-244.8
Subtotal	+140.5	-1929.7	-46.6	-1835.8
Current Changes:				
Economic	+1.9	-15.6	-	-13.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.3	+61.0	-	+72.3
Other	-	-	-	-
Support	-6.5	-79.3	-	-85.8
Subtotal	+6.7	-33.9	-	-27.2
Total Changes	+147.2	-1963.6	-46.6	-1863.0
Current Estimate	1639.6	3143.2	19.6	4802.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1349.1	3798.8	49.6	5197.5
Previous Changes:				
Quantity	-	-1619.0	-	-1619.0
Schedule	-	-36.9	-	-36.9
Engineering	-8.4	+7.7	-	-0.7
Estimating	+87.2	+460.5	-33.2	+514.5
Other	-	-	-	-
Support	+19.5	-229.3	-	-209.8
Subtotal	+98.3	-1417.0	-33.2	-1351.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+8.1	+35.9	-	+44.0
Other	-	-	-	-
Support	-4.8	-48.0	-	-52.8
Subtotal	+3.3	-12.1	-	-8.8
Total Changes	+101.6	-1429.1	-33.2	-1360.7
Current Estimate	1450.7	2369.7	16.4	3836.8

b. (U) Previous Change Explanations --

RDT&E

Economic: (U) Revised economic escalation indices.

Engineering: (U) Addition, restructure and cancelation of Variant missile program.

Estimating: (U) Reflection of fiscal adjustments and revised Variant estimate to incorporate proposal evaluation and fact-finding. Revised estimate of basic program requirements. Adjustments for current and prior year escalation.

Support: (U) Revised estimate for the addition of Depot repair capability for Circuit Card assemblies, schedule slip related to depot repair capability, revised estimate for Ops Flt system software and

13b. (U) Cost Variance Analysis (Cont'd):
Depot Repair Capability and redesign of test instrumentation kits.

Procurement

Economic:	(U) Revised economic escalation indices and correction of error in December 1989 SAR.
Quantity:	(U) Reduction of missile quantity from 1461 to 1000, to 640 and then to 460.
Schedule:	(U) Program rephasing, reduction in missile quantity from 1461 to 1000, to 640 and then to 460, and reduction in fiscal year buy profile quantities.
Engineering:	(U) Addition and restructure of Variant missile program, reduction in Aircraft Integration requirements, and reduction in engineering applicable to quantity reduction from 1000 to 460.
Estimating:	(U) Reflection of fiscal adjustments, effects of competition and removal of Common Support Equipment funds. Reduction applicable to quantity reduction from 1000 to 460, reconfigured guidance sets and loss of Blanket Purchasing Agreement. Addition and Deletion of MDMSC Variant production qualification, revised estimate for Defense Business Operating Fund, and change in procurement strategy. Increase in weapon system support cost based on latest proposal fact-finding. Revised FY87/88 estimate to ceiling, the cost of terminated assets for reduced quantity and shutdown costs. Adjustment for current and prior year escalation.
Support:	(U) Reevaluation of support requirements and transfer of Variant cost from Other System Costs to Flyaway. Reduction in support requirements based on quantity reduction, correction of error in Dec 89 SAR and revised estimate extending support requirements thru FY96.

MILCON

Economic:	(U) Revised economic escalation indices.
Estimating:	(U) Revised estimate of Main Operating Base (MOB) requirements and revision to prior year inflation indices.

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)		+1.9
Revised estimate for mission support and contractor support requirements. (Estimating)	+8.1	+11.3
Revised estimate for outyear support requirements. (Support)	-4.8	-6.5
RDT&E Subtotal	+3.3	+6.7
(2) Procurement		
Revised economic escalation indices. (Economic)	--	-15.6
Adjustment for current and prior year escalation. (Estimating)	+3.9	+6.2
Revised estimate for production closeout of restructured program. (Estimating)	+32.0	+54.8
Revised estimate for outyear support requirements. (Support)	-48.0	-79.3
Procurement Subtotal	-12.1	-33.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4.562	0.392	4.534	0.493	-0.012	1.190	--	-0.719	5.878	10.440

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --

(U) AGM 129 (FY90):

MCDONNELL DOUGLAS, ST. LOUIS, MO
F33657-89-C-0083, FPI/FPP
Award: May 1, 1988
Definitized: June 2, 1992

Initial Contract Price		
Target	Ceiling	Qty
$216.8	$221.1	50

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$217.2	$221.2	50	$221.2	$221.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-5.4	$-1.2
Cumulative Variances To Date (12/30/92)	$-4.2	$0.0
Net Change	$1.2	$1.2

Explanation of Change:

(U) Deliveries on the contract are complete, no further CPR data will be available. This is the last report for this contract.

(U) AGM 129 (FY91):

MCDONNELL DOUGLAS, ST LOUIS, MO
F33657-89-C-0083, FPI/FPP
Award: December 20, 1989
Definitized: June 2, 1992

Initial Contract Price		
Target	Ceiling	Qty
$172.9	$178.8	50

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$172.9	$178.8	50	$172.5	$168.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.3	$-10.8
Cumulative Variances To Date (12/30/92)	$2.6	$-7.5
Net Change	$2.9	$3.3

Explanation of Change:

(U) The positive cost variance is due to lower support costs than anticipated. The negative cumulative schedule variance is due to availablility of GFE assets and critical shortages of guidance sets reaching production station in time. The positive net change in schedule variance is due to resolution of the critical part shortage problem.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 66.7% (12 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 97.1% ($4664.4 / $4802.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	1597.3	25.4	12.1	4.8	1639.6
Procurement	3047.5	59.4	19.8	16.5	3143.2
MILCON	19.6	-	-	-	19.6
O&M	-	-	-	-	-
Total	4664.4	84.8	31.9	21.3	4802.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1982				3.4	3.3	3.3	3.3	9.2
1983				140.7	143.4	143.4	143.4	4.9
1984				457.4	484.4	484.4	484.1	3.8
1985				231.3	253.3	253.3	253.2	3.4
1986				158.8	178.0	178.0	178.0	2.8
1987				118.3	138.7	138.7	138.7	2.7

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1988				121.8	147.4	147.4	147.4	3.0
1989				77.0	96.3	96.1	90.9	4.2
1990				32.2	41.9	40.5	33.6	4.0
1991				38.5	51.8	51.2	46.8	4.3
1992				28.5	39.3	18.0	5.9	2.8
1993				13.8	19.5	1.6	0.2	2.4
1994				17.6	25.4			2.4
1995				8.2	12.1			2.3
1996				3.2	4.8			2.3
Subtot				1450.7	1639.6	1555.9	1525.5	
Appropriation: 3010 Aircraft Procurement, Air Force								
1984								
1985			51.2	51.2	60.0	60.0	58.7	3.4
1986			58.6	58.6	71.2	71.2	70.2	2.8
Subtot			109.8	109.8	131.2	131.2	128.9	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force								
1984				34.6	39.6	39.6	39.6	8.0
1985	10	0.4	52.4	128.3	151.0	151.0	151.0	3.4
1986	100	19.7	388.2	448.8	552.5	552.5	551.8	2.8
1987	54	36.2	439.9	585.3	752.1	736.3	700.1	2.7
1988	52	74.9	206.8	270.7	361.4	361.4	227.7	3.0
1989								4.2
1990	65	9.4	269.0	222.4	314.5	303.4	268.4	4.0
1991	59	7.2	262.9	312.4	454.2	440.2	221.1	4.3
1992	120	131.3	42.3	130.4	192.0	161.4	34.6	2.8
1993		33.2	11.0	65.7	99.0	1.2		2.4
1994		9.7		38.5	59.4			2.4
1995		8.9		12.6	19.8			2.3
1996		5.7		6.7	10.8			2.3
1997				1.2	1.9			2.2
1998				1.1	1.8			2.2
1999				1.2	2.0			2.2
Subtot	460	336.6	1672.5	2259.9	3012.0	2747.0	2194.3	

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3300 Military Construction, Air Force								
1987				16.4	19.6	19.6	16.2	2.7
Subtot				16.4	19.6	19.6	16.2	
Grand Total	460	336.6	1782.3	3836.8	4802.4	4453.7	3864.9	

(U) Obligations and expenditures reflect Program Office records as of 15 April 1993.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

The full rate production baseline for 1000 missiles was approved at DAB IIIB in July 1991. No steady state production rate was approved. FY92 was last buy year.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	59.4	0.0	-59.4	-59.4
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	19.8	0.0	-19.8	-19.8
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	95.7	16.5	95.7	+79.2	+79.2

Note: FY92 was the last buy year.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	25/25
Procurement	378/390

d. (U) Approved Design-to-Cost Objective -- N/A.

(U) Note — The ACM does not have a Design-To-Cost Objective.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

(U) The ACM is designed as a "wooden round" requiring minimal scheduled maintenance. The operational environment consists primarily of a 90-day period of flight alert followed by a 270-day "ready storage" at the Weapon Storage Area. While on flight alert, periodic Built in Tests (BIT) are conducted to insure missile war readiness. In addition, Loaded Launcher Pylon Tests are scheduled at 24-month intervals to verify both missile and pylon integrity. This test is conducted using the Electronic System Test Set (ESTS) and is more effective than aircraft software BIT tests. Scheduled missile maintenance is required only at the 5-year point, when the engine requires depot recertification and the pyrotechnic devices reach

18a. (U) Operating and Support Costs (Cont'd):
their certified life. Active efforts are underway to extend these intervals. The only other scheduled maintenance is a 48-month warhead recertification which is a DoE requirement. Personnel costs are direct costs to support primary consumption, contractor support, operational test launch support, operational software support and maintenance training software support. Base consumables and contractor support are based on expected maintenance actions and the number of Main Operating Bases (MOBs). Operational and maintenance training software support is estimated by comparison to similar operational systems. Depot cost is a summary cost to include Interim Contractor Support (ICS), unscheduled and scheduled depot maintenance manhours and the air vehicle and component surveillance programs. Unscheduled maintenance manhours were estimated from demonstrated BIT failure rates, Optimum Repair Level Analysis data, and depot planning factors from AFLC Pamphlet 173-10. ICS includes both pipeline and condemnation spares for support maintenance requirements, air vehicle modification, depot software support and technical data updates. Other direct costs include second destination transportation, system management support, contractor sustaining support and material management. Indirect costs are indirect personnel costs at ACC operating facilities. This system does not replace another system in the inventory; no antecedant system costs are shown below. This estimate was completed in July 1990.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AGM-129	Avg Annual Cost Per Antecedant
Unit Mission Personnel	217.5	N/A
Unit Level Consumption	35.1	N/A
Depot Maintenance	332.3	N/A
Sustaining Investment	145.9	N/A
Install Support Personne	30.7	N/A
Indir Support Personnel	48.0	N/A
Depot Nonmaintenance	391.8	N/A
Acquisition & Training	25.1	N/A
FOT&E Support	84.8	N/A
Total	1311.2	N/A

c. (U) Contractor Support Costs -- None.

Note: (U) These Operating and Support (O&S) Costs are reported at the total program level and were calculated using the approved O&S estimate done to support the DABIII-B decision. The estimate was done for 1461 missiles, and was adjusted for a quantity of 1000 missiles. ACC had not developed a new deployment schedule for the reduced quantity, therefore, no data was available to calculate cost per ACC wing as displayed in the December 1989 SAR. The reduction to 460 missiles will cause an even greater change to the ACC deployment schedule. Until we receive a new plan from ACC we cannot develop a new O&S estimate. The change puts the estimate too far out of a reasonableness range for extrapolation. We expect a new deployment plan from ACC now that a stable quantity has been determined. There is no known antecedent to the AGM-129.

N-18 FDS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: FIXED DIST SYS (FDS)

AS OF DATE: December 31, 1992

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1. (U) **Designation and Nomenclature (Preferred Name):**
   Fixed Distributed System (FDS)

2. (U) **DoD Component:** Navy

3. (U) **Responsible Office and Telephone Number:**

FDS Program Manager	Mr. R. L. Hobart
Space/Naval Warfare Systems Command	Assigned: October 16, 1991
Department of the Navy	AV 332-0041 COMM (703) 602-0041
Washington, DC 20363-5100	

4. (U) **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0604784N Project X1312
   PE 0603784N Project X1312
   PE 0204311N (Shared) FY87 and Prior
   Project X0766 (Shared)
   MILCON:
   PE 0204311N (Shared)

No Security Objection to Open Publication
(AS AMENDED)
93-C-0430
MAY 26 1993
Ann L. Andersen
Office of the Chief of
Naval Operations Dept. of the Navy

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(U) Shore Segment. -- Two competitive design contracts for the Shore Signal and Information Processing System (SSIPS) were awarded, one to GE and the other to IBM, in September 1989 on a Firm Fixed Price (FFP) basis. An E&MD contract was awarded to IBM on 21 February 1992 on a CPIF basis to complete the shore segment development.

(U) A revised Program Baseline was approved by the Office of the Secretary of Defense (OSD) as a result of the FY92/93 President's Budget. Due to cancellation of the FDS production, the program has been reduced from seven systems (six production and one RDT&E) to one RDT&E system, thus all non-recurring costs associated with development are levied against this single system.

b. (U) Significant Developments Since Last Report --
(U) Underwater Segment. -- Redesign effort for components of the Underwater Segment (UWS) which failed testing in FY91 completed with the successful Phase II Critical Design Review and unit testing. Repeater manufacturing began at the AT&T Eagle Facility in Greensboro, NC. The shore landing, 141 nautical miles of armored cable and 3 trunk repeaters have been integrated, loaded aboard ship and installed as part of the FDS-1 system. Design, coding and testing of the Demultiplexer Functional Controller Software (DFCS) was successfully accomplished.

(U) Shore Segment. -- A contract modification for the Shore Signal and Information Processing Segment (SSIPS) was awarded to IBM, Manassas, VA, that provides for maximum commonality with existing hardware and software components of the IUSS resulting in lower life cycle support costs and reduced system complexity, use of Navy Standard Desktop Computers and the development of the FDS-D processing suite. The Shore Signal and Information Processing Segment (SSIPS) Build 1 (of 4 builds) Software completed design, coding and unit testing.

(U) This system will satisfy mission requirements.

c. (b)(1)

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7c. (b)(1) [redacted]

(b)(1) [redacted]

8. (U) **Threshold Breaches:**
There are no breaches to the approved Acquisition Program Baseline dated 29 January 1992 and there are no Nunn-McCurdy unit cost breaches.

9. (U) **Schedule:**

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I (DNSARC)	MAY 86	MAY 86	MAY 86
Milestone II (DAB)	SEP 89	SEP 89	SEP 89
SSIPS Design Contracts Award	SEP 89	DEC 89	SEP 89
UWS FSD Contract Award	JAN 90	DEC 89	JAN 90
CBIC-V Yield Demo	N/A	JUN 90	JUN 90
Program Review	JAN 91	NOV 91	NOV 91
Integration Facility BOD	N/A	NOV 91	NOV 91
SSIPS FSD Contract Award	DEC 91	FEB 92	FEB 92
DT IIB (Underwater Pre Prod Test)	N/A	DEC 91	DEC 91
SSIPS Critical Design Review	MAR 92	MAR 92	MAR 92

(b)(1) [redacted]

b. (U) Previous Change Explanations --

The change from September 1991 to November 1991 for the Program Review was required to allow OSD to complete cost analysis to support the Program Review.

The change from December 1991 to February 1992 for the SSIPS FSD contract award is required because the procuring activity was

9b. (U) Schedule (Cont'd):
awaiting authority to sign this contract.

The changes to delete Achieve Production Rate, Milestone III A and DT II D were as a result of the recommended Program Baseline Change that was approved by OSD.

c. (U) Current Change Explanations -- NONE.

d. (U) References --

(U) Development Estimate:
DCP dated May 15, 1989, Subj: "Fixed Distributed System (FDS)"

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)	[redacted]			

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

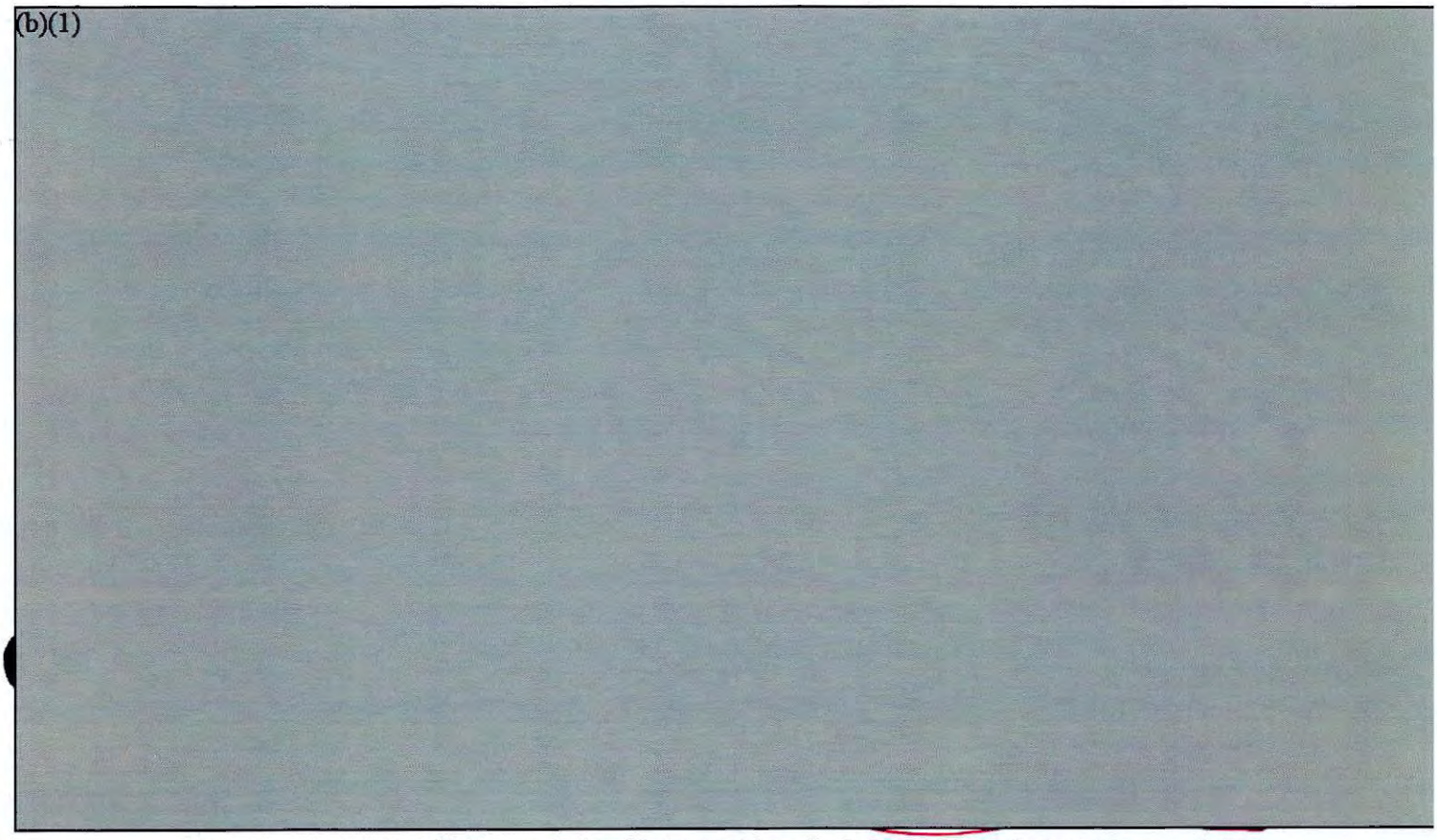
d. (U) References --

(U) Development Estimate:
DCP dated May 15, 1989, Subj: "Fixed Distributed System (FDS)"

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

(b)(1)



c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DCP dated May 15, 1989, Subj: "Fixed Distributed System (FDS)"

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 January 1992.

FIXED DIST SYS (FDS), December 31, 1992

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
(b)(1)	[redacted]		

13. (U) **Cost Variance Analysis:**

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1604.1	6135.1	108.1	7847.3
Previous Changes:				
Economic	-9.7	-24.3	-0.7	-34.7
Quantity	-	-4827.1	-	-4827.1
Schedule	-	-127.0	-	-127.0
Engineering	-	-	-	-
Estimating	-66.7	-538.3	-57.2	-662.2
Other	-	-	-	-
Support	-	-618.4	-	-618.4
Subtotal	-76.4	-6135.1	-57.9	-6269.4
Current Changes:				
Economic	-28.7	-	-	-28.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+28.7	-	-	+28.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-76.4	-6135.1	-57.9	-6269.4
Current Estimate	1527.7	-	50.2	1577.9

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1300.0	3814.8	75.7	5190.5
Previous Changes:				
Quantity	-	-3047.3	-	-3047.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-38.7	-344.0	-35.8	-418.5
Other	-	-	-	-
Support	-	-423.5	-	-423.5
Subtotal	-38.7	-3814.8	-35.8	-3889.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+23.8	-	+0.7	+24.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+23.8	-	+0.7	+24.5
Total Changes	-14.9	-3814.8	-35.1	-3864.8
Current Estimate	1285.1	-	40.6	1325.7

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised January 1992 economic escalation rates.
Estimating: Cost growth due to UWS E&MD contract efforts.

Procurement
Economic: Revised January 1992 economic escalation rates.
Quantity: Revised due to SECDEF Guidance received 29 Jan 92, now reflected in President's Budget.
Estimating: Revision on production system estimates to reflect cost savings in SSIPS effort and downsizing of production systems.
Support: Revision on production system estimates to reflect cost savings in SSIPS effort and downsizing of

13b. (U) Cost Variance Analysis (Cont'd):
production systems.

MILCON
Economic: Revised January 1992 economic escalation rates.
Estimating: Revision in size of facilities.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	N/A	-28.7
Revised estimate due to the fact that reduced escalation did not cause change in Program Acquisition Unit Cost (Estimating)	+23.8	+28.7
RDT&E Subtotal	+23.8	--
(2) MILCON		
Adjustment for Current & Prior Inflation. (Estimating)	+0.7	--
MILCON Subtotal	+0.7	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(b)(1) [redacted]

a.(U) RDT&E --

(U) FDS UWS (ULSS):	Initial Contract Price Target	Ceiling	Qty
AT&T Technologies Inc., Greensboro, NC N00039-89-C-0083, CPFF Award: February 23, 1989 Definitized: February 23, 1989	$99.9	N/A	0

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$79.5	N/A	0	$79.3	$84.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.4	$-4.2
Cumulative Variances To Date (12/31/92)	$-1.3	$-2.6
Net Change	$-1.7	$1.6

Explanation of Change:

(U) The cost and schedule variances on this contract are due solely to the planned lower production rate of EDM hardware and the schedule push-out executed in FY91. The program is funded to cover the maximum contract liability of $84.4M. Special tools/test equipment maintenance, the only remaining work on this contract, will continue through 1995.

(U) FDS UWS FSED:	Initial Contract Price		
	Target	Ceiling	Qty
AT&T, Technologies Inc., Greensboro, NC N00039-90-C-0077, CPIF Award: January 15, 1990 Definitized: January 15, 1990	$320.5	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$415.3	N/A	1	$476.5	$477.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-13.3	$-28.0
Cumulative Variances To Date (12/31/92)	$-38.7	$5.1
Net Change	$-25.4	$33.1

Explanation of Change:

(U) The 25.4M degradation in CV is due to several factors including: the redesign of the Cluster Inter-Connect cable (complete); Multiplexer/Repeater Design problems including hydrophone simulator parts procurement difficulties (resolved); higher than expected levels of test support and unexpected modifications to the Multiplexer/Repeater to allow it to meet its performance specifications (complete); the total redesign, rewrite and testing of Demultiplexer software (complete); Multiplexer/Repeater test schedule slippages (resolved); increased staffing and premium overtime for UWS integration in order to preserve schedule; production delays due to a mechanical piece part control problem (resolved); bad buffered fiber

15. (U) Contract Information (Cont'd):
restorations in armored cable which resulted in the use of twice as many Cable to Cable Junctions as baselined (resolved); and lower than expected production yields during UWS integration. Additionally, General and Administrative (G&A) Rate changes account for twenty-five percent of the CV. The G&A Rate changes are not under the control of either the industry or Navy program managers. They result from the periodic renegotiation of forward pricing rates between AT&T and the Defense Contract Management Command and apply equally to all DoD cost type contracts that this business segment of AT&T holds.

(U) SSIPS:	Initial Contract Price Target	Ceiling	Qty
IBM Corporation, Manassas, VA N00039-91-C-0031, CPIF Award: February 21, 1992 Definitized: February 21, 1992	$50.5	$0.0	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$115.2	$0.0	0	$115.2	$144.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (12/31/92)	$0.7	$-0.9
Net Change	$0.7	$-0.9

Explanation of Change:

(U) The slight positive CV was due to unexpected efficiencies in software development for the Portable Maintenance Computer and development environment hardware costs lower than budgeted. The schedule variance was due to a short slip in the completion of coding of software Build 1.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

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16b. (U) Program Funding Summary (Cont'd):

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c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1984			15.5	15.5	14.0	14.0	14.0	3.8
1985			17.0	17.0	15.9	15.9	15.9	3.4
1986			24.5	24.4	23.5	23.5	23.2	2.8
1987			33.7	33.6	33.3	33.2	33.2	2.7
1988			69.0	69.0	70.6	70.6	68.4	3.0
1989			92.9	92.9	99.0	99.0	93.9	4.2
1990			119.4	119.3	132.4	132.4	130.6	4.0
1991			176.5	176.3	202.6	202.0	191.8	4.3
1992			200.6	201.5	237.6	224.7	130.3	2.8

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1993			126.2	128.0	154.5	118.7	2.1	2.4
1994			102.4	104.7	129.4			2.4
1995			48.0	49.6	62.7			2.3
1996			31.8	33.1	42.8			2.3
1997			19.1	20.1	26.6			2.2
1998			37.8	40.2	54.3			2.2
1999			38.2	40.9	56.5			2.2
2000			41.3	44.7	63.1			2.2
2001			25.9	28.3	40.8			2.2
2002			31.1	34.4	50.6			2.2
2003			10.4	11.6	17.5			2.2
Subtot	1		1261.3	1285.1	1527.7	934.0	703.4	
Appropriation: 1205 Military Construction, Navy								
1990				16.6	18.9	18.9	18.9	4.0
1991								
1992								
1993								

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1205 Military Construction, Navy (Cont'd)								
1994				3.0	3.8			2.4
1995				8.2	10.6			2.3
1996				12.8	16.9			2.3
Subtot				40.6	50.2	18.9	18.9	
Grand Total	1		1261.3	1325.7	1577.9	952.9	722.3	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

None. Production program has been terminated.

(b)(1)

(b)(1)

[redacted]

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	1/0
Procurement	0/0

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 0 - @ Peak Rate: 0/mo			
FY 88 Base-Year $	337.3	337.3	337.3
Then Year $	474.6	474.6	474.6
@ Qty 0 (1st three years) - @ Peak Rate: 0/mo			
FY 88 Base-Year $	337.3	337.3	337.3
Then Year $	473.8	473.8	473.8

	Develop Estimate	Current Estimate	Lasted Approved Threshold
(1) @ Qty 0 - @ Peak Rate:	1 NFS per year		
FY88 Base Year $	337.3	337.3	337.3
Then-Year $ (Avg unit)	474.6	474.6	474.6
(2) @ Qty 8 - @ Peak Rate:	1 NFT per year		
FY88 Base Year $	186.7	186.7	186.7
Then Year $ (Avg unit)	300.6	300.6	300.6

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The major technical, program, operating and cost assumptions underlying the independent cost assessment of the Fixed Distributed System Operating and Support (O&S) costs are presented as follows:

(U) Technical Assumptions:

(U) The detailed design of underwater electronic components will incorporate proven technology of SOSUS, SOSUS LUSC and TAT-8 systems to the maximum extent possible.

(U) The AT&T/Simplex deep water and armor cable design will incorporate proven technology and production processes of SOSUS List 1, 2, and 3 and TAT-8 cable to the maximum extent possible.

(U) Reliability, maintainability and availability goals established for the program will be met.

18a. (U) Operating and Support Costs (Cont'd):

(U) The AT&T high reliability specifications will be applied fully to electro-optic components of the underwater segment.

(U) The E-Systems Concept 1 architecture, which includes both Navy standard and commercial non-developmental hardware, is appropriate for estimating SSIPS O&S costs.

(C) Program Assumptions:

(U) The FDS will have an operational life of 24 years.

(b)(1) [redacted]

(U) Operating Assumptions:

(U) The FDS shore segment will be housed in an existing Navy Facility (NAVFAC).

(U) The FDS shore facility operates continuously, 24 hours per day, 7 days per week.

(U) Operating personnel will be distributed into five section watches enabling implementation of a four section watch bill with sufficient personnel available to account for non-watch time.

(U) Manning for maintenance of processing suites and subsystems will also be a 24-hour per day operation.

(U) The introduction of FDS into the Integrated Undersea Surveillance System (IUSS) will require an additional manning of 84 enlisted operators and 6 enlisted maintenance personnel at the FDS site.

(U) Possible offsets in personnel requirements due to the incorporation of FDS advances in processing automation into other IUSS systems is not included in the baseline O&S costs estimate.

(U) Possible reduction of FDS operating personnel requirements due to possible system augmentations such as increased levels of automation are not considered in the baseline analysis.

(U) Maintenance of underwater segment electro-optic equipment will be through the AT&T Technologies sea/shore engineering contract.

(U) Cable Repair and underwater segment equipment maintenance will be undertaken using Military Sealift Command (MSC) ships.

(U) FDS-1 and subsequent FDS deployed notional systems will require 30 days load and underway days each for Neptune and Zeus class ships each year to support underwater segment maintenance requirements.

(U) SSIPS equipment organizational maintenance will be performed by enlisted personnel augmented by Contractor Engineering Technical Services (CETS) at the FDS sites.

(U) Depot maintenance of SSIPS equipment will be performed at Navy Depots where they exist for military NDI or at the Contractor's facilities for commercial NDI.

(U) Cost Assumptions:

18a. (U) Operating and Support Costs (Cont'd):

(U) OSD indices dated January 1992 are appropriate for estimating escalated and outlayed costs for the FDS program.

(U) O&M,N costs for lease of MSC ships and funding of contract support for standard riders are applicable to an assessment of FDS operating and support costs.

(U) Estimates are in constant FY88 dollars.

(U) FDS hardware will have no residual value after the end of scheduled operations.

b. (U) Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per platform	Avg Annual Cost Per platform
Personnel	2.7	N/A
O&S Consumables	1.3	N/A
Direct Depot Maintenance	0.6	N/A
Sustaining Investment	10.1	N/A
Other Direct Costs	4.1	N/A
Indirect Costs	3.7	N/A
	0.0	N/A
Total	22.5	N/A

c. (U) Contractor Support Costs -- None.

Note: RDT&E Funding should be included in the 18.c. table as follows:

	FY1993 &Prior	FY1994	FY1995	Bal to Complete	Total
RDT&E	38.7	6.6	6.7	11.3	63.3
O&MN	0.0	0.0	0.0	23.5	23.5
Ind Fund	0.0	0.0	0.0	0.0	0.0
Total	38.7	6.6	6.7	34.8	86.8

92-051

A-21 MCS

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*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MCS

AS OF DATE: December 31, 1992

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
MANEUVER CONTROL SYSTEM (MCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PM-OPTADS, SFAE-CC-MVR
FORT MONMOUTH, NJ 07703-5405
AV 992-4041 COMM 908-532-4041
COL CARL L. LAMBETH
Assigned: May 25, 1991

No SECURITY Objection to PUBLIC RELEASE
25 MAY 1993
SECURITY REVIEW, GDCSINT, HQDA

4. Program Elements/Procurement Line Items:

RDT&E:
PE 23740 (Shared) Project D484

PROCUREMENT:
APPN 2035 ICN BA9320 (Army)
APPN 2035 ICN BA9710 (Army)

5. Related Programs:
ARMY TACTICAL COMMAND AND CONTROL SYSTEMS (ATCCS) - COMMON HARDWARE SOFTWARE (CHS) and STANDARD INTEGRATED COMMAND POST SYSTEM.

6. Mission and Description:
The Maneuver Control System (MCS) is one of the five Battlefield Functional Areas (BFA) of the Army Tactical Command and Control Systems (ATCCS). MCS is a network of computer equipment which serves

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6. Mission and Description (Cont'd):

the Commander and Staff Corps, Division, Brigade, and Maneuver Battalion. The system provides automated assistance in the coordination of plans, dissemination of orders and guidance, and the monitoring and supervision of operations. MCS is the force level commander's information system and integrates the maneuver functions with the automated or manual Command and Control (C2) systems of the other four functional areas. (The other four functional areas are: Fire Support, Air Defense, Intelligence/Electronic Warfare, and Combat Service Support). MCS versions of software will extend automated command and control capabilities down to battalion/squadron, company/troop, squad/weapon system and platoon level through the subordinate systems to MCS.

The Maneuver Control System (MCS) is a collection of computer equipment which supports operation planning and control at one of the five nodal points (Maneuver Control) of the Army Tactical Command and Control System (ATCCS). We will not develop, modify or field any more Tactical Computer Terminal (TCT) nomenclature AN/UYQ-30 and 30A. The TCT has been declared obsolete by DA and we have replaced those few that were fielded. MCS currently consists of the Non-Development Items (NDI) such as the Tactical Computer Processor (TCP) nomenclatured AN/UYQ-43(V)1. It is a microprocessor based portable system which provides automated assistance to the maneuver commanders. The Analyst Console (AC) nomenclatured AN/UYQ-43(V)2, is a microprocessor based intelligent terminal, connected to the TCP via Local Area Network, which provides multiple workstations within a nodal configuration. The MCS takes advantage of commercial state-of-the-art technology by more readily fielding the commercial hardware NDI.

The TCP/AC were transitioned with currently fielded software Version 10.03.1G1, from OPM OPTADS to the Communications-Electronics Command (CECOM) on 4 Oct 1992. The NDI equipment (TCP/AC) will be replaced by Common Hardware (CH). CH is composed of the Transportable Computer Unit (TCU), Lightweight Computer Unit (LCU), and the Hand-Held Terminal Unit (HTU), which will exceed the capability and the processing of the TCP/AC. These devices are to be fielded to all US Army Tactical Units. They are smaller and lighter and provide ease of transportability to all ATCCS users.

7. Program Highlights:

a. Significant Historical Developments --

In 1980, the first elements of the MCS were fielded to VII Corps in Europe, which consisted of Engineering models of the AN/UYQ-30 Tactical Computer Terminal (TCT) with a limited Command, Control and Communications (C3) capability. In 1981 the system was enhanced with additional TCT's and increased software C3 capabilities. In 1982, the MCS progam was continued by awarding a MCS System Engineering/ Integration and Software Development contract which was let to Ford

7a. Program Highlights (Cont'd):

Aerospace and Communication Corporation (FACC). This five year effort continued the evolutionary development of the MCS and by 1986 the software had evolved to Version 9, was written in Ada, fielded with production TCTs in Europe, and ported to the Tactcial Computer Processor (TCP) prototype.

In 1986 the production contract for the AN/UYQ-43 (V)1/(V)2 TCP/AC Non-Developmental Item (NDI) was awarded. In 1987 the second five year evolutionaly development effort was awarded to FACC (now Loral Command and Control Systems) for the software effort and a separate contract to TRW for the system engineering/integration effort. Under these efforts, software Version 10 was completed, and fielded in 1989.

b. Significant Developments Since Last Report --

The system architecture has dramatically evolved over the last five years. The TCT has been phased out of the field and the TCP and AC were transitioned with the currently fielded software Version 10.03.1G1, from OPM OPTADS to CECOM on 4 October 1992.

MCS is expected to satisfy mission requirements.

c. Changes Since As Of Date --

A resructured MCS program strategy was presented to Dr. Quinn, OSD, and approved by the OSD C3I committee on 11 March 1993. The MCS resturctured program strategy is to utilize the Common ATCCS Support Software (CASS) as the new MCS software infrastructure building blocks. A significant portion of this infrastructure is being developed by PM FATDS. The CASS product will be delivered to the Product Manager for CASS (under PM CHS). He will separate the FATDS unique software and provide this product to PM OPTADS. This office will then integrate the PM CASS product with the salvageable Version 11 software in FY93 and FY94. This integration effort will be done by General Electric (GE) under the PEO CCS SE&I contractor. In a parallel effort, an MCS prototype team has been established to expedite the integration of mature prototype application software to the new MCS "CASS based" software. The MCS software capability is planned for demonstration in 3QTR FY94.

MCS Version 11 software continued under Loral, however they continued experiencing significant delays in their development effort. As a result, there was little confidence in Loral's ability to deliver Version 11 without further schedule slips and cost growth. The decision was made by the Army to discontinue funding the Loral contract. The Army decided the MCS requirements can best be satisfied by an alternative other than continuing the Loral Contract effort. This decision was approved by the Army Acquisition Executive via a memorandum dated 24 February 1993.

7c. **Program Highlights (Cont'd)**:

In February 1993 the Army decided to discontinue the development contract beyond the current target contract price. The revised approach to complete Block III development is described as MCS Version 12.0. Version 12.0 is a rapid prototype effort which relies on Common Hardware (CHS-1), the Lightweight Computer Unit (LCU) and a foundation of Common ATCCS Support Software (CASS) to support standalone applications which provide an initial maneuver control capability, supports horizontal interoperability testing with other BFA control systems, and exploits reusable software from MCS Version 11.0. The MCS Operational Requirements Document (ORD) (26 October 1992) remains valid for Version 12.0. Block IV emcompasses development of MCS software Versions 12.1 through 12.3 and fielding of CHS-2, Lightweight Computer Unit (LCU) and Handheld Terminal Unit (HTU) at battalion and below, the Large Scale Printer/Plotter (LSPP), the Large Screen Display (LSD), and the Tactical Scanner (TACSCAN). Software enhancements in Versions 12.1 through 12.3 include developing and analyzing basic course of action wargaming, and embedded training at the operator and staff section level.

8. **Threshold Breaches**:
Due to the contractors failure to deliver Version 11 software on schedule and within cost, a decision was made to discontinue funding Version 11 software development effort, therefore causing schedule breaches to the approved Acquisition Program Baseline (APB) dated 6 June 1992. A revised APB is in process. There are no Nunn/McCurdy unit cost breaches.

9. **Schedule**:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
AN/UYQ-30/30A			
Milestone III ASARC	MAY 83	MAY 83	MAY 83
Initial Prod Contract Award	JUN 83	JUN 83	JUN 83
First Prod Del Initial Contr	FEB 85	FEB 85	FEB 85
Follow-on Prod Contr Award	AUG 86	AUG 86	AUG 86
FUE/IOC	SEP 86	SEP 86	SEP 86
User Follow-on Test & Eval I	APR 87	APR 87	APR 87
First Prod Deliv Follow Contr	NOV 87	NOV 87	NOV 87
AN/UYQ-43 (V)1 & (V) 2			
IPR Approval	JUN 86	JUN 86	JUN 86
Initial Production Contract Award	JUN 87	JUN 87	JUN 87
First Article Test			

9a. **Schedule (Cont'd):**

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate	
Start	MAY 88	MAY 88	MAY 88	
Complete	SEP 88	SEP 88	SEP 88	
Production Contract Option Award	SEP 88	SEP 88	SEP 88	
First Prod Deliv Initial Contr	FEB 89	FEB 89	FEB 89	
FUE\IOC	APR 89	APR 89	APR 89	
First Prod Deliv Prod Option	JUN 89	JUN 89	JUN 89	
Field Validation	AUG 89	AUG 89	AUG 89	
Common Hardware/Software				
First CHS Prototype Delivery (BuildI)	DEC 88	DEC 88	DEC 88	
HQDA Project Mgt Review	N/A	NOV 91	NOV 91	(Ch-1)
HQDA Project Mgt Review	N/A	FEB 92	FEB 92	(Ch-1)
Early User Test & Eval (EUT&E)	N/A	SEP 92	N/A	
CHS Software Verification Test	MAY 91	N/A	N/A	(Ch-2)
System Tech Test	N/A	MAR 93	N/A	(Ch-2)
System Confidence Demo	N/A	MAR 93	N/A	(Ch-2)
IOT&E				
Start	N/A	MAY 93	N/A	(Ch-2)
Complete	N/A	JUN 93	N/A	(Ch-2)
FUE/IOC 1/	NOV 91	N/A	N/A	(Ch-2)
FUE	N/A	JUL 93	N/A	(Ch-2)
Follow-on Test & Evaluation	JAN 92	SEP 95	N/A	(Ch-2)
Milestone III ASARC	MAY 92	AUG 93	N/A	(Ch-2)
C3I Committee Review	N/A	SEP 93	N/A	(Ch-2)
First MCS Prod Buy of CHS	JUN 92	SEP 93	N/A	(Ch-2)
First Production Deliveries	OCT 92	JAN 94	N/A	(Ch-2)
IOC (includes VII & CHS)	N/A	SEP 94	N/A	(Ch-2)
Software Releases				
Version 9	SEP 86	SEP 86	SEP 86	
Version 10	OCT 88	OCT 88	OCT 88	
Version 11 (30/30A & 43 (V) 1&2)	NOV 90	NOV 90	N/A	(Ch-2)
Version 11 (CHS)	SEP 91	FEB 93	N/A	(Ch-2)

1/ CHS SW Verification Test, FUE/IOC - The Verification/Testing concept has changed from separate Hardware and Software to a systems testing, which consist of Common Hardware and V11 Software. Because of this testing concept (combining software and hardware) the separate verification and Common Hardware FUE entries are no longer applicable.

b. Previous Change Explanations --

The schedule dates changed from the SAR baseline due to a program restructure. CHS SW Verification Test, FUE/IOC are no longer

9b. Schedule (Cont'd):
applicable because the verification/testing concept has changed from separate hardware and software to a systems testing, which consists of Common Hardware and V11 Software. FOT&E schedule was not applicable because the initial test performed in Europe for the V10 software hosted on the TCT equipment was considered equivalent to an IOT&E, therefore, in the 89 APB the next schedule test was an FOT&E. That test is now considered inappropriate for the current program strategy. IOT&E was added because it is required prior to the production decision for the CH equipment and V11 software, therefore, the May 93 date is reflected as a current estimate. Version 11 schedule date changed from Sep 91 to Feb 93 due to major factors in the slippage of V11 software. In FY-91 a congressional funding reduction ($8.6) led to a scope reduction of work efforts by the software development contractor. There were technical difficulties in the development of the system and communications software using commercial off the shelf (COTS) software. There was also a fire at the software contractors facility, which caused disruption and slippage in schedule. There were subsequent briefings to the Management Review Panel (MRP) (25 Nov 92 and 11 Feb 92) on the MCS software development status by PM OPTADS. The MRP did not recommend approval of the MCS APB until the schedule and technical assessment of the contractors effort met the software deliveries for the Early User Test and Evaluation in Sept 92 and the Initial Operation Test and Evaluation in May 93.

c. Current Change Explanations --

(Ch-1) - Milestones added with the approval of the APB dated 6 June 1992.

(Ch-2) - Due to Loral's failure to deliver Version 11 software on schedule and within cost, a decision was made to discontinue funding Version 11 software development effort. This caused milestone schedule breaches to the Acquisition Program Baseline (APB) dated 6 June 1992 and the reason for the current estimate showing N/A's. A program deviation report has been prepared and a revised MCS APB is in process.

d. References --

Development Estimate:
AAE Approved Acquisition Program Baseline dated 16 October 1989.

Approved Program:
AAE Approved Acquisition Program Baseline dated 06 June 1992.

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10. **Performance Characteristics:**

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
100% Memory Retention during power fluc/loss (at least xx mins)					
AN/UYQ-30/30A	5	5	/ 5	10	5
AN/UYQ-43 (V)1&(V)2	5	5	/ 5	10	5
Common Hardware/Software	5	5	/ 5	TBD	5
Purge Memory (within xx mins) 1/					
AN/UYQ-30/30A	3	3	/ 3	1.57	3
AN/UYQ-43 (V)1&(V)2	3	3	/ 3	1.32	3
Common Hardware/Software	3	3	/ 3	TBD	3
Mean Time to Repair (hr) Organizational					
AN/UYQ-30/30A	.5	.5	/ .5	.5	.5
AN/UYQ-43 (V)1&(V)2	.5	.5	/ .5	.5	.5
Common Hardware/Software	.5	.5	/ .5	.25	.5
Direct Support					
AN/UYQ-30/30A	2.0	2.0	/ 2.0	2.0	2.0
Reliability (hrs)					
AN/UYQ-30/30A TCT	433	433	/ 433	433	433
AN/UYQ-30/30A TCT'	310	310	/ 310	310	310
Operational Avail (Ao) 2/					
AN/UYQ-30/30A TCT	.88	.88	/ .88	.88	.88
AN/UYQ-30/30A TCT	.84	.84	/ .84	.84	.84
AN/UYQ-43 (V)1&(V)2	.76	.76	/ .76	.76	.76
Common Hardware/Software	.88	.88	/ .76	TBD	.88
Continuity of Operations (hrs) 3/					
Common Hardware/ Software	N/A	1	/ 1	TBD	1
Fidelity (%)	N/A	.95	/ .95	TBD	.95
Common Hardware/ Software 4/					

10a. **Performance Characteristics (Cont'd):**

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
Quality (hrs at Corps Level) 5/				
Common Hardware/ Software	N/A	4 / 4	TBD	4

1/ Purging System Memory - Purge the system, memory, excluding tape, within 3 minutes.
2/ User has not established a required Ao for the MCS system
3/ Continuity of Operations - Data elements in maneuver, enemy, NBC, and other data base partition shall not display more than 1 hour difference in age between same echelons CPs, while their CPs are operational in 80% of the sample.
4/ Fidelity - That which is transmitted, is transmitted with a least 95% fidelity.
5/ Quality - Data concerning current location and status of a maneuver battalion shall not be more than 4 hrs old at Corps, 2 hrs old at Division and 1 hr old at Brigade.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
AAE Aproved Acquisition Program Baseline dated 16 October 1989.

Approved Program:
AAE Approved Acquisition Program Baseline dated 06 June 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	215.2	231.0	241.8
Procurement	545.5	443.1	437.7
Flyaway	(451.3)		(306.8)
Support Fielding Costs			(85.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(94.2)		(45.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 80 Base-Year $	760.7	674.1	679.5
Escalation	511.4	464.7	456.7
Development (RDT&E)	(123.1)	(136.0)	(142.5)
Procurement	(388.3)	(328.7)	(314.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1272.1	1138.8	1136.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	6365	5667	5667
Total	6365	5667	5667

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
AAE Aproved Acquisition Program Baseline dated 16 October 1989.

Approved Program:
AAE Approved Acquisition Program Baseline dated 06 June 1992.

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12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1136.2	1138.8	1136.2
(2) Quantity	5667	5667	5667
(3) Unit Cost	0.200	0.201	0.200
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	16.8	16.8	1.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	16.8	16.8	1.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

For FY 1994, Budget Year UCR Baseline (Dec 92 SAR), 1.4M$'s are for spares.

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13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	338.3	933.8	0.0	1272.1
Previous Changes:				
Economic	-2.0	+28.2	-	+26.2
Quantity	-	-122.8	-	-122.8
Schedule	-	+16.5	-	+16.5
Engineering	-	+14.3	-	+14.3
Estimating	+30.7	-177.8	-	-147.1
Other	-	-	-	-
Support	-	+79.6	-	+79.6
Subtotal	+28.7	-162.0	-	-133.3
Current Changes:				
Economic	-6.2	-22.9	-	-29.1
Quantity	-	+16.5	-	+16.5
Schedule	-	-10.4	-	-10.4
Engineering	-	-	-	-
Estimating	+23.5	+5.4	-	+28.9
Other	-	-	-	-
Support	-	-8.5	-	-8.5
Subtotal	+17.3	-19.9	-	-2.6
Total Changes	+46.0	-181.9	-	-135.9
Current Estimate	384.3	751.9	-	1136.2

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	215.2	545.5	0.0	760.7
Previous Changes:				
Quantity	-	-58.7	-	-58.7
Schedule	-	-0.1	-	-0.1
Engineering	-	+8.2	-	+8.2
Estimating	+15.8	-96.4	-	-80.6
Other	-	-	-	-
Support	-	+44.6	-	+44.6
Subtotal	+15.8	-102.4	-	-86.6
Current Changes:				
Quantity	-	+0.1	-	+0.1
Schedule	-	-0.1	-	-0.1
Engineering	-	-	-	-
Estimating	+10.8	+2.5	-	+13.3
Other	-	-	-	-
Support	-	-7.9	-	-7.9
Subtotal	+10.8	-5.4	-	+5.4
Total Changes	+26.6	-107.8	-	-81.2
Current Estimate	241.8	437.7	-	679.5

b. Previous Change Explanations --

RDT&E

Economic: Revised esclation indicies.

Estimating: Current and prior inflation offset. Revised estimate associated with reprogramming of R&D funding from FY-90 through FY-2000.

Procurement

Economic: Revised esclation indicies. Economic adjustment for negative program change.

Quantity: Reduction in Active Army Force Structure from 6365 to 5667.

Schedule: One year production delay due to a slip of the IOT&E test from May 92 to May 93.

13b. Cost Variance Analysis (Cont'd):

Engineering: Engineering upgrades of NDI equipment to a 375 processor and 8MB RAM increase.

Estimating: A revised estimate of hardware costs based on actual contract data.
Reconcile differences between flyaway and support.

Support: Transition of OMA Support dollars to OPA support dollars.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-6.2
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	+0.1
Revised estimate associated with reprogramming of R&D funding from FY-93 through FY-2000. (Estimating)	+10.9	+23.4
RDT&E Subtotal	+10.8	+17.3
(2) Procurement		
A correction to the Dec 91 SAR to recategorize from a Schedule change to a Quantity change. (Quantity)	+0.1	+16.5
(Schedule)	-0.1	-16.5
Revised economic escalation indices. (Economic)	N/A	-22.9
Change in procurement buy schedule, program slipped two years. (Schedule)	--	+6.1
Adjustment for Current & Prior Inflation. (Estimating)	+0.5	+0.8
Reconcile differences between flyaway and support due to changes in cost estimating assumptions and techniques. (Estimating)	+1.5	+3.9
Adjustment for Current & Prior Inflation. (Support)	+0.5	+0.8
Initial Spares increased due to a change in methodology (% applied) for the LCU's and an increase in spares due to the extension of the program by two years. (Support)	+5.4	+11.5

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Support/Fielding costs have decreased due to realignment of a supprort element to flyaway and changes in support/fielding requirements. (Support)	-13.3	-20.1
A correction to the Dec 91 SAR to recategorize from a Support change to a Estimating change. (Support)	-0.5	-0.7
(Estimating)	+0.5	+0.7
Procurement Subtotal	-5.4	-19.9

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.200	-0.001	0.005	0.001	0.003	-0.021	--	0.013	--	0.200

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

Systems Eng/Integration:	Initial Contract Price Target	Ceiling	Qty
TRW, INC, Redondo Beach, CA DAAB07-87-C-E012, CPFF Award: July 24, 1987 Definitized: July 24, 1987	$3.8	$4.1	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$164.3	$164.3	0	$164.5	$164.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.5	$0.0
Cumulative Variances To Date (05/01/92)	$0.6	$0.0
Net Change	$1.1	$0.0

Explanation of Change:

This variance is related to costs for other projects on TRW, other than MCS (i.e. STACCS, CASS, CSSCE, etc).

15. **Contract Information (Cont'd):**
This contract was completed in September 1992. This is the final report for TRW. There will be no more reporting on this contract because the MCS portion is 97% complete.

	Initial Contract Price		
LORAL:	Target	Ceiling	Qty
LORAL Command/Control Sys, Colorado Springs, CO			
DAAB07-88-C-E212, CPIF/AF	$3.6	$3.8	0
Award: October 29, 1987			
Definitized: October 29, 1987			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$61.2	N/A	0	$66.0	$60.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.4	$-0.5
Cumulative Variances To Date (12/25/92)	$-0.4	$-1.8
Net Change	$-0.8	$-1.3

Explanation of Change:

The negative cost variance (-.4M) was due to the integration account that used overtime to get the interim build of Version 11 software completed sooner. Extra effort was required for the Program Performance Test (PPT) build. The negative schedule variance (-1.8M) was due to the inability of start up efforts on PPT dry runs. Version 11 software was not stable enough to be tested.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 63.6% (14 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 57.2% ($650.3 / $1136.2)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY80-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2001)	Total
RDT&E	252.3	16.3	7.0	108.7	384.3
Procurement	398.0	1.4	62.1	290.4	751.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	650.3	17.7	69.1	399.1	1136.2

Appropriation: 2035 Other Procurement, Army includes spare dollars.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1980				8.6	9.0	9.0	9.0	10.6
1981				13.2	15.2	15.2	15.2	10.6
1982				13.6	16.6	16.6	16.6	7.6
1983				15.6	19.9	19.9	19.9	4.9
1984				12.5	16.5	16.5	16.5	3.8
1985				23.3	31.8	31.8	31.8	3.4
1986				8.5	11.9	11.9	11.9	2.8
1987				8.7	12.6	12.6	12.6	2.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1988				9.1	14.0	14.0	14.0	3.0
1989				7.6	11.9	11.9	11.9	4.2
1990				7.0	11.3	11.3	11.3	4.0
1991				10.6	17.8	17.8	17.8	4.3
1992				21.3	36.8	36.7	28.5	2.8
1993				15.3	27.0	4.6	1.2	2.4
1994				9.0	16.3			2.4
1995				3.8	7.0			2.3
1996				7.6	14.4			2.3
1997				6.7	12.9			2.2
1998				6.4	12.7			2.2
1999				4.3	8.7			2.2
2000				29.1	60.0			2.2
Subtot				241.8	384.3	229.8	218.2	
Appropriation: 2035 Other Procurement, Army								
1983	34	1.9	17.6	20.6	27.7	27.7	27.7	4.9
1984	31	0.2	20.4	21.5	29.5	29.5	29.5	3.8

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
1985	38	0.2	19.6	21.4	30.4	30.4	30.4	3.4
1986	103	0.4	37.6	45.1	66.0	66.0	66.0	2.8
1987	705	0.1	38.9	46.6	70.6	70.6	70.6	2.7
1988	887	1.1	52.3	72.1	114.3	114.3	114.3	3.0
1989			5.9	5.9	9.6	9.6	9.6	4.2
1990			11.3	11.3	19.1	19.1	19.1	4.0
1991			3.5	3.5	6.0	5.3	5.1	4.3
1992			2.2	4.5	8.0	7.9	6.6	2.8
1993			9.0	9.3	16.8	0.9		2.4
1994				0.8	1.4			2.4
1995	840		18.3	32.9	62.1			2.3
1996	518		13.8	28.1	54.3			2.3
1997	377		7.4	23.9	47.1			2.2
1998	607		11.6	21.0	42.4			2.2
1999	93		2.6	9.2	18.9			2.2
2000	617		15.1	29.6	62.3			2.2
2001	817		15.8	30.4	65.4			2.2
Subtot	5667	3.9	302.9	437.7	751.9	381.3	378.9	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
Grand Total	5667	3.9	302.9	679.5	1136.2	611.1	597.1	

The recurring costs from FY89 through FY93 were for hardware component upgrades and for software development through FY90, therefore there were no end items purchased.

17. Production Rate Data:

a. Production Baseline Rate

The Maneuver Control System's (MCS) hardware will be procured off the Common Hardware Software (CHS) and Science Application International Corporation (SAIC) contracts managed by PM Common Hardware Software. Both contracts are for non-development items. The steady state full production rate for the CHS contract is identified as 200 units per month. The steady state full production rate for the SAIC contract is 300 units per month. The annual production rates for both contracts are determined based on the combined requirements of all the Automated Tactical Command and Control Systems (ATCCS) programs.

17b. **Production Rate Data (Cont'd):**

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		1.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		62.1		N/A	N/A
Procurement Qty		840		N/A	N/A
Proc. Unit Cost	N/A	0.074	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		290.4		N/A	N/A

As the full production rates for the Common Hardware Software (CHS) contracts are based on the combined requirements of the ATCCS programs, cost and quantity variances cannot be determined on an individual program basis.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	10/10
Procurement	1798/1798

d. Approved Design-to-Cost Objective -- N/A.

The MCS program will utilize common hardware equipment. There is no Design-to-Cost Objective for this program.

18. **Operating and Support Costs:**

a. Assumptions and Ground Rules --

The major assumptions and ground rules used to estimate operating and support costs are as follows: There is no antecedent system for MCS. All MCS operating costs are estimated based upon peacetime useage rates. The operating tempo for MCS is 2,280 hours for Active Units and 496 hours for Reserves. Costs are based on an operating life of 20 years. Common Hardware (CH) equipment life is 10 years, therefore CH equipment will be reprocured and replaced after 10 years. MCS has no dedicated crew. The CH equipment will be fielded to the Active

18a. **Operating and Support Costs (Cont'd):**
Force, while NDI will be removed from the Active Army, and fielded to the Reserves. The sustaining investment consists primarily of replenishment repair parts (vehicles, standard integrated command post system (SICPS), generators) & replenishment spares (all equipment). There will be depot maintenance labor for the end item vehicles for the TCU and LCU equipment. There will be warranty maintenance cost for CH equipment. POL is needed for all the vehicles and generators to support the CH equipment. Other direct costs include, military pay and allowances, system specific support, trainee/trainer, and system project management costs. The Modifications/Kit costs are alterations to the system through modification work orders or ECP's after fielding. Other sustainment includes costs associated with the CHS rebuy, Center for Software Engineering, Regional Support Center Costs, Life Cycle Support, consumables, and Common ATCCS costs.

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Equipment	Avg Annual Cost Per Equipment (Antecedent)
MODIFICATIONS	0.1	N/A
MAINTENANCE	1.4	N/A
SYS ENGR/PROG MGT	0.1	N/A
FIELD MAINT CIVILIAN LAB	0.2	N/A
REPLN REPAIR (SPARES)	0.9	N/A
REPLN CONS(REPAIR PARTS)	0.5	N/A
POL	0.1	N/A
END ITEM SUPPPLY & MAINT	0.6	N/A
SOFTWARE (LCSSC)	0.1	N/A
TRAINING	1.2	N/A
Total	5.2	N/A

18c. **Operating and Support Costs (Cont'd):**

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
DEPOT MAINT	2.5	2.5	2.5	---	7.5
INDUSTRIAL FUNDS	---	---	---	---	---
Total	2.5	2.5	2.5	---	7.5

NOTE: 18b: SOURCE OF O&S DATA: BCE EXCURSION 19 March 93 - Annual O&S costs per equipment are input in thousands of dollars: Modifications =$100.00, Maintenance (Org, Dir Spt and Gen Spt Main P&A) = $1,455.00, System Engineering/Program Management (military personnel spm) = $100.00, Field Maintenance Civilian Labor = $179.00, Replenishment Depot - Level Repair (spares) = $925.00, Replenishment Consumables (repair parts) $536.00, End Item Supply & Maintenance (depot maintenance labor and material costs) = $624.00, POL = $100.00, Software (life cycle software support costs) = $100.00, Other O&M (warranty maint, ATCCS Common Costs, computer paper, spares for tooling spt equip, and CHS second buy costs) = $1,196.00.

92-052

A-25 SADARM

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SADARM

AS OF DATE: December 31, 1992

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CLEARED
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MAY 25 1993 5
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):**
   Sense and Destroy Armor (SADARM)

2. (U) **DoD Component:** Army

3. (U) **Responsible Office and Telephone Number:**

OFFICE OF THE PROJECT MANAGER FOR SENSE & DESTROY ARMOR (SADARM)	COL. RICHARD C. WILLIAMS
ATTN: SFAE-AR-SD	Assigned: July 2, 1989
PICATINNY ARSEN, NJ 07806-5000	AV 880-2573 COMM 201-724-2573

The Sense and Destroy Armor (SADARM) system includes:
(1) Projectile, 155mm, XM898 and (2) Rocket, Multiple Launch Rocket System, XM29

4. (U) **Program Elements/Procurement Line Items:**

RDT&E:
PE 64802 Project D369
PE 64814 Project D644

~~Sensor in Classification Remarked~~
~~26 MAY 1993~~
~~[illegible]~~

~~Classified by [illegible] April 1992~~
~~Declassify on: OADR~~
~~Downgrade Instructions: Regraded unclassified when separated from enclosures/pages.~~

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97-654 **[redacted]**

4. (U) **Program Elements/Procurement Line Items (Cont'd):**

PROCUREMENT:
APPN 2032 ICN C67900 (Army)
APPN 2034 ICN E66300 (Army)

5. (U) **Related Programs:**
M270 Launcher; M109 Howitzer; M198 Howitzer; M109A6.

6. (U) **Mission and Description:**
The SADARM smart munitions will provide an enhanced counterfire capability for the Multiple Launch Rocket System (MLRS) and 155mm Howitzer delivery systems with both systems capable of attacking targets well beyond the Forward Line of Troops (FLOT) in a fire and forget mode. This indirect fire mission can be accomplished under inclement weather, degraded battlefield conditions and Nuclear, Biological, Chemical (NBC) environments, both day and night. The SADARM munitions are designed for use against self-propelled howitzers, lightly armored personnel carriers and other stationary armored threat vehicles encountered in counterfire, close support, Suppression of Enemy Air Defense (SEAD) and interdiction. The SADARM Munitions Need and Planned Operational Environment description is contained in the SADARM Required Operational Capability (ROC) document dated 11 March 1986 and as revised 18 June 1987. The system is comprised of the following major components: multi-mode sensor with infra-red, and active and passive millimeter wave; lethal mechanism with explosively-formed penetrator; parachutes which control deceleration, spin and descent velocity; fuzing, safe and arm device; and appropriate carrier hardware.

7. (U) **Program Highlights:**
a. (U) Significant Historical Developments --
Aerojet and Alliant were selected in September 1986 to competitively complete Full Scale Development (FSD) of the submunitions and carriers for the 155mm and 8 inch projectiles and MLRS submunitions. In December 1986, LTV was selected as the MLRS Rocket integration contractor. The requirement for the 8 inch SADARM was deleted when the Army developed plans to retire the 8 inch howitzer from the inventory. In July 1989, both FSD submunition/projectile contractors scored hits with live 8 inch hardware in the Congressional Demonstration Test.

The Program Restructure, approved by the Defense Acquisition Executive in March 1990 to reduce test schedule risk, was implemented. Due to changes in the Eastern European threat, the Army Acquisition Objectives (AAO) for the MLRS SADARM and the 155mm SADARM were reduced by 60% and 38% respectively, causing a Program Acquisition Unit Cost (PAUC) breach in excess of 25%. On May 3, 1991, the Under Secretary of Defense for Acquisition recertified the

7a. (U) Program Highlights (Cont'd):

program to Congress.

In May 1991, a new acquisition strategy for the completion of Engineering & Manufacturing Development (EMD) (formerly FSD) was implemented due to budget reductions. The Aerojet design was chosen for EMD completion after an extensive design select effort which included both competing EMD contractors firing 155mm SADARM projectiles and scoring direct hits in March 1991. Aerojet and Alliant are teamed together in a Prime/Sub arrangement.

b. (U) Significant Developments Since Last Report -- During the period, the SADARM design was finalized. To prove out the sensor, captive flight tests involving a total of over 133,000 target encounters to date in a multitude of terrain, climatic and countermeasure conditions were conducted. The sensor met all performance requirements. SADARM's Explosively Formed Penetrator (EFP) warhead tests confirmed the accuracy and lethality for both the MLRS and 155mm designs in a total of 140 test firings to date. System tests for the 155mm SADARM were initiated with a series of 34 Reliability Growth firings. The objective of this testing was to force out manufacturing process problems by subjecting production representative hardware to worst case conditions by "firing at the corners", i.e., min/max dynamic and temperature operating conditions. Corrective actions were applied to most of the problems by the end of the year, resulting in procurement cost increases. Tests to validate the remaining fixes were scheduled for 1993. On 1 Dec 92, "end to end" system performance was demonstrated by two hits from three tactical projectiles fired over a target array. Rocket firings with sensored inert submunitions at White Sands Missile Range on 15 Dec 92 confirmed rocket integrity. MLRS SADARM Rocket testing will continue into 1993 with Contractor Development (Technical) Testing to include tactical submunitions.

The 155mm procurement start was delayed and additional RDT&E funds were reprogrammed from the Procurement Appropriation. The PM's estimate was that technical issues could be resolved within baseline thresholds. The production start was delayed from FY93 to FY94, which caused six-month threshold breaches to the APB.

Due to affordability, the MLRS Production Start was delayed by one year to FY95, and quantities were reduced during the FY95 - FY99 timeframe. In addition, the basic MLRS rocket production is not funded during this timeframe. This caused an increase to the total procurement cost of the MLRS SADARM in excess of the 5% threshold.

The previously approved Acquisition Strategy Report provided for a two-year LRP (FY93 & FY94) so that hardware could be delivered and

7b. (U) **Program Highlights (Cont'd)**:

tested prior to a FY95 FRP decision. With the loss of FY93 procurement funding, a stand alone FY94 LRP procurement would not provide this data. The Army requested a change to the Acquisition Strategy Report to reinstate the planned two year LRP for the 155mm SADARM (FY94 & FY 95) and to also include the FY95 MLRS SADARM procurement.

The production Acquisition Strategy Report was modified to incorporate the changes to the funding as well as the new milestone for the MLRS SADARM, effecting several of the production phase milestones by more than six months. The Acquisition Strategy Report reflecting these changes was approved by OSD on 7 April 1993.

The overall program schedule was subsequently adjusted to accommodate these changes. While some intermediate development phase milestones and milestones in the production phase exceed their thresholds, the Low Rate Production (LRP) decision does not. A Program Deviation Report was submitted by the Project Manager on 14 April 1993 reporting these "fact of life" changes.

There are no significant changes to program technical requirements.

The SADARM munitions are expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) **Threshold Breaches**:
There are cost and schedule breaches to the 6 September 1991 APB as a result of the elimination of FY93 Ammunition Procurement funding, the extension of the EMD program one year by Congress, and the revisions to the production Acquisition Strategy Report. The 155mm SADARM Milestone IIIa LRP decision date is still within the threshold. A Program Deviation Report was submitted on 14 April 1993.

There are no Nunn-McCurdy Unit Cost Breaches.

9. (U) **Schedule**:
155mm SADARM Projectile

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Generic SADARM Submunition Development Approved by Army Materiel Cmd	NOV 84	NOV 84	NOV 84

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9a. (U) Schedule (Cont'd):
155mm SADARM Projectile

(U) Milestones (Cont'd) —	Development Estimate	Approved Program	Current Estimate
DA Approval-48 Month Acq.Plan	N/A	N/A	N/A
Congressional Direction for FSD/Prod	DEC 85	DEC 85	DEC 85
DA Approval SADARM (155mm & MLRS) ROC	MAR 86	MAR 86	MAR 86
DA In-Process Review for Submunition FSD	SEP 86	SEP 86	SEP 86
Competitive Submunition FSD Contract Award	SEP 86	SEP 86	SEP 86
Milestone II (ASARC)	NOV 87	NOV 87	NOV 87
Milestone II (DAB)	MAR 88	MAR 88	MAR 88
Congressional Demonstration			
Start	JAN 89	JAN 89	JAN 89
Complete	APR 89	APR 89	JUL 89
Army Decision: keep 2 submun sizes	N/A	NOV 90	NOV 90
155mm SADARM Tech Tests			
Start	MAY 90	AUG 91	JUL 91
Complete	JUL 91	NOV 92	JUL 93(Ch-1)
155mm SADARM IOT&E			
Start	JUL 91	JUL 93	OCT 93(Ch-1)
Complete	DEC 91	OCT 93	JUL 94(Ch-1)
Submunition Design Select	JAN 92	N/A	N/A
Type Classification	JAN 92	N/A	N/A
Milestone III (ASARC)	JAN 92	N/A	N/A
Milestone IIIA-155mm SADARM	N/A	APR 93	SEP 93(Ch-1)
155mm SADARM LRIP Contract Award	N/A	APR 93	NOV 93(Ch-1)
Milestone III (DAB) - 155mm and MLRS	APR 92	JUN 94	JUN 95(Ch-1)
155mm SADARM Full Scale Production Award	MAY 92	JUN 94	OCT 95(Ch-1)
IOC/First Unit Equipped-155mm SADARM	JUL 93	JUL 94	SEP 95(Ch-1)

b. (U) Previous Change Explanations —

The Congressional Demonstration End was rescheduled from APR 89 to JUL 89 because of a longer than expected test, fix, and retest process.

The remaining development program was restructured to reduce excessive test schedule risk.

DA Approval 48 month Acquisition Plan was changed from Apr 86 to N/A. It was deleted from the 6 Sep 91 APB.

The 155mm Tech Test Start was changed from Aug 91 to JUL 91 to reflect the actual date of accomplishment.

SADARM, December 31, 1992

9c. (U) Schedule (Cont'd):
155mm SADARM Projectile

c. (U) Current Change Explanations --

(Ch-1) The following milestones were changed as a result of the elimination of FY93 Ammunition Procurement funding and extension of the EMD program one year by Congress:

MILESTONE	FROM	TO
Tech Test Complete	NOV 92	JUL 93
IOT&E Start	JUL 93	OCT 93
IOT&E Complete	OCT 93	JUL 94
Milestone IIIa	MAR 93	SEP 93
LRIP Contract Award	APR 93	NOV 93
Milestone III DAB - 155mm & MLRS	JUN 94	JUN 95
Full Scale Production Award	JUN 94	OCT 95
IOC/First Unit Equipped	JUL 94	SEP 95

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated 24 July 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 06 September 1991.

MLRS SADARM Rocket

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
DA Approval SADARM (155mm & MLRS) ROC	MAR 86	MAR 86	MAR 86
MLRS SADARM Initial Integration Contract Award	DEC 86	DEC 86	DEC 86
Milestone II (DAB) - 155mm & MLRS	MAR 88	MAR 88	MAR 88
MLRS SADARM FSD Contract Award	SEP 88	SEP 88	SEP 88
MLRS SADARM Tech Tests			
Start	JUL 91	JUL 92	DEC 92(Ch-1)
Complete	DEC 91	JAN 93	OCT 93(Ch-1)
Type Classification (Limited)	JAN 92	N/A	N/A
Milestone III (DAB) - 155mm and MLRS	APR 92	JUN 94	JUN 95(Ch-1)
MLRS SADARM IOT&E			
Start	NOV 92	SEP 93	OCT 94(Ch-1)
Complete	JUL 93	FEB 94	NOV 94(Ch-1)
Type Classification	SEP 93	N/A	N/A

SADARM, December 31, 1992

9a. (U) Schedule (Cont'd):
MLRS SADARM Rocket

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
MLRS SADARM Full Scale Production Award	APR 94	JUN 94	DEC 95(Ch-1)
IOC/First Unit Equipped-MLRS SADARM	MAY 94	DEC 95	FEB 97(Ch-1)
Milestone IIIa - MLRS SADARM	N/A	N/A	SEP 93(Ch-1)
MLRS SADARM LRP Contract Award	N/A	N/A	DEC 94(Ch-1)

b. (U) Previous Change Explanations --

The development program was restructured to reduce excessive test schedule risk.

The PM estimated that he can accelerate MLRS SADARM Tech Tests, Complete from Jan 93 to Dec 92.

c. (U) Current Change Explanations --

(Ch-1) The following milestones were changed as a result of the elimination of FY93 Ammunition Procurement funding and extension of the EMD program one year by Congress:

MILESTONE	FROM	TO
Tech Test Start	JUL 92	DEC 92
Tech Test Complete	DEC 92	OCT 93
Milestone III (DAB) - 155 and MLRS	JUN 94	JUN 95
IOT&E Start	SEP 93	OCT 94
IOT&E Complete	FEB 94	NOV 94
Full Scale Production Award	JUN 94	DEC 95
IOC/First Unit Equipped	DEC 95	FEB 97

The following milestones were added and will be proposed in the revised APB currently in staffing due to APB breaches:

Milestone IIIa - MLRS SADARM	SEP 93
MLRS SADARM LRP Contract Award *	DEC 94

* Contract cannot be awarded until DEC 94 because procurement funding will not be available until FY95.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated 24 July, 1989.

SADARM, December 31, 1992

9d. (U) Schedule (Cont'd):
MLRS SADARM Rocket

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 06 September 1991.

10. (U) Performance Characteristics:
155mm SADARM Projectile

(b)(1)	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

c. (U) Current Change Explanations -- None.

10d. (U) Performance Characteristics (Cont'd):
155mm SADARM Projectile

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated July 24, 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 06 September 1991.

(b)(1)	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated 24 July, 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 06 September 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
155mm SADARM Projectile

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	237.7	231.9	234.2
Procurement	248.0	667.8	681.2
	(248.0)		(681.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	485.7	899.7	915.4
Escalation	49.4	356.5	261.0
Development (RDT&E)	(8.2)	(19.4)	(17.4)
Procurement	(41.2)	(337.1)	(243.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	535.1	1256.2	1176.4
b. (U) Quantity --			
Development (RDT&E)	132	0	132
Procurement	10156	39018	39018
Total	10288	39018	39150

Note: Excludes 772 RDTE prototypes from the SAR Baseline and 772 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs --

None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated July 24, 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 06 September 1991.

11a. (U) Total Program Cost and Quantity (Cont'd):
MLRS SADARM Rocket

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	416.4	576.6	591.2
Procurement	703.6	1730.9	1881.2
Flyaway	(699.2)		(1875.8)
Other Wpn Sys Cost	(4.4)		(5.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	1120.0	2307.5	2472.4
Escalation	131.7	1104.7	891.8
Development (RDT&E)	(10.9)	(37.6)	(36.2)
Procurement	(120.8)	(1067.1)	(855.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1251.7	3412.2	3364.2
b. (U) Quantity --			
Development (RDT&E)	0	0	38
Procurement	0	23712	23712
Total	0	23712	23750

Note: Excludes 16 RDTE prototypes from the SAR Baseline and 16 from the Current Estimate that are not considered fully configured.

No quantities were defined for the MLRS SADARM at the time the SAR Development Baseline was established.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated July 24, 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 06 September 1991.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

155mm SADARM Projectile

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1176.4	1213.6	1176.4
(2) Quantity	39150	39150	39150
(3) Unit Cost	0.030	0.031	0.030
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	77.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	77.7
(2) Quantity	0	0	1213
(3) Unit Cost	N/A	N/A	0.064

MLRS SADARM Rocket

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3364.2	3362.5	3364.2
(2) Quantity	23750	23750	23750
(3) Unit Cost	0.142	0.142	0.142
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

Due to submunition commonality (93% of submunition components), the majority of RDT&E costs for the 155mm SADARM Projectile and MLRS SADARM Rocket are not separable. For the purposes of calculating Program Acquisition Unit Cost for each, the common RDT&E costs were prorated based on the total quantities of submunitions to be produced for each end item.

13. (U) Cost Variance Analysis:
Summary - All end items

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	673.2	1113.6	0.0	1786.8
Previous Changes:				
Economic	+5.3	+685.8	-	+691.1
Quantity	-	+1396.2	-	+1396.2
Schedule	+44.6	+934.0	-	+978.6
Engineering	-	-	-	-
Estimating	+125.1	-403.6	-	-278.5
Other	-	-	-	-
Support	-	+1.9	-	+1.9
Subtotal	+175.0	+2614.3	-	+2789.3
Current Changes:				
Economic	-3.0	-348.5	-	-351.5
Quantity	-	-	-	-
Schedule	-	+71.0	-	+71.0
Engineering	-	-	-	-
Estimating	+33.8	+210.2	-	+244.0
Other	-	-	-	-
Support	-	+1.0	-	+1.0
Subtotal	+30.8	-66.3	-	-35.5
Total Changes	+205.8	+2548.0	-	+2753.8
Current Estimate	879.0	3661.6	-	4540.6

13a. (U) Cost Variance Analysis (Cont'd):
Summary - All end items

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	654.1	951.6	0.0	1605.7
Previous Changes:				
Quantity	-	+1521.6	-	+1521.6
Schedule	+33.7	+154.7	-	+188.4
Engineering	-	-	-	-
Estimating	+108.9	-209.2	-	-100.3
Other	-	-	-	-
Support	-	+0.4	-	+0.4
Subtotal	+142.6	+1467.5	-	+1610.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+28.7	+142.7	-	+171.4
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	+28.7	+143.3	-	+172.0
Total Changes	+171.3	+1610.8	-	+1782.1
Current Estimate	825.4	2562.4	-	3387.8

13a. (U) Cost Variance Analysis (Cont'd):
155mm SADARM Projectile

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	245.9	289.2	0.0	535.1
Previous Changes:				
Economic	+1.8	+111.4	-	+113.2
Quantity	-	+375.1	-	+375.1
Schedule	+7.9	+477.2	-	+485.1
Engineering	-	-	-	-
Estimating	-11.8	-283.1	-	-294.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.1	+680.6	-	+678.5
Current Changes:				
Economic	-0.6	-77.8	-	-78.4
Quantity	-	-	-	-
Schedule	-	+8.2	-	+8.2
Engineering	-	-	-	-
Estimating	+8.4	+24.6	-	+33.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7.8	-45.0	-	-37.2
Total Changes	+5.7	+635.6	-	+641.3
Current Estimate	251.6	924.8	-	1176.4

13a. (U) Cost Variance Analysis (Cont'd):
155mm SADARM Projectile

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	237.7	248.0	0.0	485.7
Previous Changes:				
Quantity	-	+351.2	-	+351.2
Schedule	+6.4	+194.1	-	+200.5
Engineering	-	-	-	-
Estimating	-16.9	-128.7	-	-145.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-10.5	+416.6	-	+406.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+7.0	+16.6	-	+23.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7.0	+16.6	-	+23.6
Total Changes	-3.5	+433.2	-	+429.7
Current Estimate	234.2	681.2	-	915.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised inflation indices.
Schedule: Schedule adjusted to reduce test schedule risk.
Estimating: Program restructured to include two submunition sizes and changed acquisition strategy to a Joint Venture. Reallocated common submunition development costs between 155mm and MLRS due to production quantity changes.

Procurement

Ecohomic: Revised inflation indices.
Quantity: Addition of FY95-FY02 quantities (+53,230)

13b. (U) Cost Variance Analysis (Cont'd):

155mm SADARM Projectile

Reduction in quantities by 24,368 to 39,018.

Schedule: Schedule adjustment related to ammended FY90/91 President's Budget. Delay production start due to RDT&E schedule change, and stretch to accomodate funding limitations.

Estimating: Added costs to fund Process & Reliability Enhancement (PRE), and reduced submunition unit costs due to PRE savings. Revised estimating methodology.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.6
Adjustment for Current & Prior Inflation. (Estimating)	+0.6	+0.6
Convert FY93 Procurement Funding to RDT&E to allow additional time for test-fix-test of complete tactical rounds. (Estimating)	+7.2	+8.7
General funding decrement. (Estimating)	-0.8	-0.9
RDT&E Subtotal	+7.0	+7.8
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-77.8
Change in procurement buy schedule. (Schedule)	--	+8.2
Revised procurement estimates due to Prime/Sub (vice Joint Venture) and results of fixes to EMD problems. (Estimating)	+16.6	+24.6
Procurement Subtotal	+16.6	-45.0

13a. (U) Cost Variance Analysis (Cont'd):
MLRS SADARM Rocket

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	427.3	824.4	0.0	1251.7
Previous Changes:				
Economic	+3.5	+574.4	-	+577.9
Quantity	-	+1021.1	-	+1021.1
Schedule	+36.7	+456.8	-	+493.5
Engineering	-	-	-	-
Estimating	+136.9	-120.5	-	+16.4
Other	-	-	-	-
Support	-	+1.9	-	+1.9
Subtotal	+177.1	+1933.7	-	+2110.8
Current Changes:				
Economic	-2.4	-270.7	-	-273.1
Quantity	-	-	-	-
Schedule	-	+62.8	-	+62.8
Engineering	-	-	-	-
Estimating	+25.4	+185.6	-	+211.0
Other	-	-	-	-
Support	-	+1.0	-	+1.0
Subtotal	+23.0	-21.3	-	+1.7
Total Changes	+200.1	+1912.4	-	+2112.5
Current Estimate	627.4	2736.8	-	3364.2

13a. (U) Cost Variance Analysis (Cont'd):
MLRS SADARM Rocket

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	416.4	703.6	0.0	1120.0
Previous Changes:				
Quantity	-	+1170.4	-	+1170.4
Schedule	+27.3	-39.4	-	-12.1
Engineering	-	-	-	-
Estimating	+125.8	-80.5	-	+45.3
Other	-	-	-	-
Support	-	+0.4	-	+0.4
Subtotal	+153.1	+1050.9	-	+1204.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+21.7	+126.1	-	+147.8
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	+21.7	+126.7	-	+148.4
Total Changes	+174.8	+1177.6	-	+1352.4
Current Estimate	591.2	1881.2	-	2472.4

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised inflation indices.
Schedule: Revised to reduce test schedule risk.
Estimating: Program was restructured to include two submunition sizes, changed acquisition strategy to a Joint Venture. Refined prior estimate.

Procurement
Economic: Revised inflation indices.
Quantity: Changed quantity from zero to 59,110 then to 23,712.
Schedule: Started production two years later due to RDT&E

13b. (U) Cost Variance Analysis (Cont'd):

MLRS SADARM Rocket

restructure and funding limitations, stretched an additional year due to funding limitations.

Estimating: Decrease in submunition unit costs, increase in rocket costs due to cancellation of basic MLRS rocket production after FY91.

Support: Changed support requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-2.4
Adjustment for Current & Prior Inflation. (Estimating)	+1.1	+1.3
Conversion of FY93 procurement funding to RDT&E to accomodate additional time for test-fix-test (Estimating)	+22.0	+25.6
General funding decrement. (Estimating)	-1.4	-1.5
RDT&E Subtotal	+21.7	+23.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-270.7
Change in procurement buy schedule. (Schedule)	--	+62.8
Elimination of basic MLRS rocket co-production increased costs of MLRS SADARM rockets. (Estimating)	+126.1	+185.6
Increased data costs based on increased rocket costs. (Support)	+0.6	+1.0
Procurement Subtotal	+126.7	-21.3

14. (U) **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

155mm SADARM Projectile

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.052	0.001	-0.029	0.013	--	-0.007	--	--	-0.022	0.030

MLRS SADARM Rocket

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	0.142

15. (U) **Contract Information** (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) SADARM-EMD:

AEROJET ELECTROSYSTEMS CO, AZUSA, CA
DAAA21-86-C-0309, CPIF
Award: September 1, 1986
Definitized: September 1, 1986

Initial Contract Price		
Target	Ceiling	Qty
$87.2	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$321.6	$321.6	0	$355.5	$355.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.2	$0.0
Cumulative Variances To Date (01/28/93)	$-17.3	$-6.3
Net Change	$-17.1	$-6.3

Explanation of Change:

The cost and schedule variances are a result of more effort than expected in the test-fix-test phase of EMD.

15. (U) **Contract Information (Cont'd)**:
This contract applies to the 155mm SADARM and the MLRS SADARM E&MD.

(U) SADARM-EMD MLRS INT:	Initial Contract Price Target	Ceiling	Qty
LORAL VOUGHT SYSTEMS, GRAND PRAIRIE, TX			
DAAH01-88-C-0716, CPIF	$70.7	N/A	0
Award: September 30, 1988			
Definitized: September 30, 1988			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$89.1	N/A	0	$96.2	$101.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.6	$-1.3
Cumulative Variances To Date (01/31/93)	$-9.3	$-5.6
Net Change	$-6.7	$-4.3

Explanation of Change:

The cost and schedule variances are a result of more effort than expected in the test-fix-test phase of EMD.

This contract applies only to the MLRS SADARM EMD.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 38.1% (8 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 18.3% ($833.0 / $4540.6)

16b. (U) Program Funding Summary (Cont'd):
155mm SADARM Projectile

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

155mm SADARM Projectile

Appropriation	Prior Years (FY86-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2004)	Total
RDT&E	247.9	3.7	-	-	251.6
Procurement	-	77.7	75.4	771.7	924.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	247.9	81.4	75.4	771.7	1176.4

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

MLRS SADARM Rocket

Appropriation	Prior Years (FY86-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2006)	Total
RDT&E	585.1	37.3	5.0	-	627.4
Procurement	-	-	82.2	2654.6	2736.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	585.1	37.3	87.2	2654.6	3364.2

16c. (U) Program Funding Summary (Cont'd):
155mm SADARM Projectile

c. (U) Annual Summary -- 155mm SADARM Projectile

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1986				2.7	2.5	2.5	2.5	2.8
1987				14.9	14.2	14.2	14.2	2.7
1988				24.3	24.0	24.0	23.7	3.0
1989				37.9	38.9	38.9	38.7	4.2
1990				48.5	51.7	51.7	51.1	4.0
1991				29.0	32.2	32.2	31.8	4.3
1992				55.4	63.0	63.0	59.9	2.8
1993				18.4	21.4	12.2	4.9	2.4
1994				3.1	3.7			2.4
1995								2.3
Subtot	132			234.2	251.6	238.7	226.8	

Due to commonality, the RDT&E costs for submunitions for the 155mm Projectile and MLRS Rocket are not readily separable. They have been allocated to each system based on the July 1991 Baseline Cost Estimate for the purpose of this report.

Appropriation: 2034 Procurement of Ammunition, Army

1994	1213		64.7	64.7	77.7			2.4

16c. (U) Program Funding Summary (Cont'd):
155mm SADARM Projectile

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2034 Procurement of Ammunition, Army (Cont'd)								
1995	1486		61.4	61.4	75.4			2.3
1996	1193		38.8	38.8	48.7			2.3
1997	1666		40.8	40.8	52.4			2.2
1998	1963		41.1	41.1	53.9			2.2
1999	2581		48.6	48.6	65.2			2.2
2000	4740		76.9	76.9	105.4			2.2
2001	5300		79.1	79.1	110.7			2.2
2002	6800		86.3	86.3	123.5			2.2
2003	6450		78.0	78.0	114.0			2.2
2004	5626		65.5	65.5	97.9			2.2
Subtot	39018		681.2	681.2	924.8			
Grand Total	39150		681.2	915.4	1176.4	238.7	226.8	

16c. (U) **Program Funding Summary (Cont'd)**:
MLRS SADARM Rocket

c. (U) Annual Summary -- MLRS SADARM Rocket

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1986				34.1	31.6	31.6	31.6	2.8
1987				60.3	57.4	57.4	57.4	2.7
1988				76.9	75.9	75.9	75.3	3.0
1989				102.3	105.0	105.0	104.6	4.2
1990				77.8	83.0	83.0	82.5	4.0
1991				68.3	75.7	75.6	74.8	4.3
1992				74.9	85.2	85.1	81.0	2.8
1993				61.2	71.3	40.9	16.2	2.4
1994				31.3	37.3			2.4
1995				4.1	5.0			2.3
Subtot	38			591.2	627.4	554.5	523.4	

Due to commonality, the RDT&E costs for the submunitions for the 155mm Projectile and MLRS SADARM Rocket are not readily severable. They have been allocated to each system based on the July 91 Baseline Cost Estimate for the purpose of this report.

Appropriation: 2032 Missile Procurement, Army

1995	252		64.5	66.0	82.2			2.3

16c. (U) Program Funding Summary (Cont'd):
MLRS SADARM Rocket

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
1996	426		81.1	81.9	104.2			2.3
1997	522		80.9	81.6	106.2			2.2
1998	810		94.9	95.3	126.7			2.2
1999	1038		110.1	110.2	149.7			2.2
2000	1686		152.2	152.4	211.7			2.2
2001	2010		165.8	165.9	235.5			2.2
2002	2340		172.0	172.2	249.8			2.2
2003	2460		173.0	173.2	256.8			2.2
2004	3300		219.2	219.5	332.5			2.2
2005	4254		275.0	275.4	426.4			2.2
2006	4614		287.1	287.6	455.1			2.2
Subtot	23712		1875.8	1881.2	2736.8			
Grand Total	23750		1875.8	2472.4	3364.2	554.5	523.4	

17. (U) **Production Rate Data**:

155mm SADARM Projectile

a. (U) Production Baseline Rate

This program is pre-Milestone III and no Full Rate Production baseline has been determined.

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		77.7		N/A	N/A
Procurement Qty		1213		N/A	N/A
Proc. Unit Cost	N/A	0.064	N/A	N/A	N/A
FY 1995					
Procurement Cost		75.4		N/A	N/A
Procurement Qty		1486		N/A	N/A
Proc. Unit Cost	N/A	0.051	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		771.7		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	665/665
Procurement	0/0

d. (U) Approved Design-to-Cost Objective -- N/A.

The Design to Unit Production Costs (DTUPC) goals are on a submunition basis, not end item.

MLRS SADARM Rocket

a. (U) Production Baseline Rate

This program is pre-Milestone III and no Full Rate Production baseline has been determined.

17b. (U) Production Rate Data (Cont'd):
MLRS SADARM Rocket

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		82.2		N/A	N/A
Procurement Qty		252		N/A	N/A
Proc. Unit Cost	N/A	0.326	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		2654.6		N/A	N/A

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	26/26
Procurement	0/0

d. (U) Approved Design-to-Cost Objective -- N/A.

DTUPC is for submunitions and carrier section, not complete end item.

18. (U) Operating and Support Costs:
155mm SADARM Projectile

a. (U) Assumptions and Ground Rules --

The 155mm SADARM munitions are considered "wooden rounds" and have no operational costs. The only O&S costs are for depot storage, stockpile reliability testing and teardown testing. There is no antecedent.

b. (U) Costs -- None.

Average annual cost is $35 per 155mm SADARM/year. It shows as $0 in thousands in table.

c. (U) Contractor Support Costs -- None.

18a. (U) Operating and Support Costs (Cont'd):
MLRS SADARM Rocket

a. (U) Assumptions and Ground Rules --

The MLRS SADARM is considered a "wooden round" and has no operational costs. The only O&S costs are for stockpile testing. There is no antecedent.

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per MLRS SADARM/year.	Avg Annual Cost Per Antecedent
Stockpile testing.	0.2	N/A
Total	0.2	N/A

c. (U) Contractor Support Costs -- None.

A-13 FMTV

93-012

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: FMTV

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
MAY 26 1993 21
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Family of Medium Tactical Vechicles (FMTV)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
U.S. Army, Program Executive Office for Combat Support
ATTN: SFAE-CS-TVM (COL Boudreau)
Warren, MI 48397-5000
COL MICHAEL W. BOUDREAU
Assigned: April 1, 1992
AV 786-8665 COMM (313) 574-8665

No SECURITY Objection to PUBLIC RELEASE
25 MAY 1993
SECURITY REVIEW, WDCSINT, PENTAGON

4. Program Elements/Procurement Line Items:

RDT&E:
PE 64604 Project DH07
PROCUREMENT:
APPN 2035 ICN D15500 (Army)
APPN 2035 ICN DV0010 (Army)
APPN 2035 ICN DV0310 (Army)
APPN 2035 ICN DV0320 (Army)

5. Related Programs: None.

6. Mission and Description:
The Family of Medium Tactical Vehicles (FMTV) Non-Developmental Item (NDI) program consists of a 2 1/2 ton Light Medium Tactical Vehicle (LMTV), all wheel drive 4x4 in van and cargo body styles and a 5 ton Medium Tactical Vehicle (MTV), all wheel drive 6x6 in nine (9) body

*** UNCLASSIFIED ***

93-689

6. Mission and Description (Cont'd):

styles (cargo, cargo w/Materiel Handling Equipment (MHE), long wheel base (lwb) cargo, lwb cargo w/MHE, tractor, dump, wrecker, expansible van and fuel tanker). Commonality of commercial components within the family is the FMTV's central theme which minimizes logistics support and operational cost. The program's Joint Service Operational Requirement (JSOR) document also requires complementary 2 1/2 ton and 5 ton tactical trailers incorporating off-road performance capability and cargo bed size common with the LMTV and MTV cargo trucks. The trucks incorporate a Caterpillar turbo-charged diesel engine; an Allison automatic transmission with integral transfer case; Rockwell all-wheel drive axles; Eaton Central Tire Inflation System (CTIS) and Michelin aggressive off-road tubeless radial tires. Low Velocity Air Drop (LVAD) and Low Altitude Parachute Extraction System (LAPES) capable versions of both basic cargo and dump models are being built to support air mobile units. All models except van will be C-130 and C-141 aircraft transportable. The modified commercial Cab Over Engine (COE) tilt type three man cab is ergonometrically designed with three point safety belt harness. Tactical off-road mobility is enhanced by using radial tires, CTIS, high ground clearance chassis with modified suspension and individually damped hub reduction axles to minimize personnel and cargo shock loads, allowing cross country terrain traversing at higher speeds. The integration of all subsystems into an FMTV provides performance exceeding current medium truck fleet capabilities at twice to three times the endurance and reliability levels. The FMTV will perform line haul, local haul, unit mobility, unit resupply and other required missions in combat, combat support and combat service support units. The FMTV will replace existing and aging M44 Series 2 1/2 ton trucks, M39 and M809 Series 5 ton trucks. FMTV will also provide a follow-on to the current M939/A2 Series 5 ton truck.

7. Program Highlights:

a. Significant Historical Developments --

The Family of Medium Tactical Vehicles (FMTV) Program, Operational and Organizational Plan was approved in September 1984. The User Requirement Document (JSOR) was established on 1 May 1986, and subsequently, the Army Cost and Organizational Effectiveness Analysis (COEA) justified the program initiation on 4 June 1987. The FMTV Army Systems Acquisition Review Council (ASARC) approval was obtained on 5 August 1987, with further program approval from the Defense Acquisition Board (DAB) on 23 May 1988. Congress approved FY88 prototype funding, and prototype contracts were awarded on 21 October 1988. The Army conducted a 2 1/2 T Truck Feasibility Study which validated the requirement for a 2 1/2 T truck variant. In July 1989, as a result of the 2 1/2 T Truck Study, the LMTV was restored in the first year of the production contract. The December 1988 SAR represented a procurement program of 15 years. As a result of the

7a. Program Highlights (Cont'd):

Army approved Tactical Wheeled Vehicle Modernization Plan (TWVMP) report to Congress dated 12 April 1989, the December 1989 SAR reflected the current 30-year procurement program. An exception SAR was submitted for 31 March 1990 to report a Nunn-McCurdy breach, which resulted primarily from the change in procurement schedule as identified in the TWVMP. The Request For Proposal (RFP) responses were received from the three contractors on 7 December 1990. The Source Selection Board convened on 8 December 1990 to evaluate the proposals. As a result of budget reductions, the model mix was changed to maximize procurement dollars against requirements during the first five-year multiyear contract, with several high cost, low priority variants being deferred until the second five-year multiyear contract. Cost proposals from the three competing contractors were received in February 1991. A quarterly exception SAR was submitted in June 1991 due to Nunn-McCurdy unit cost breaches and schedule slips of more than six months. The FMTV ASARC IIIA milestone review was completed on 10 June 1991, and granted approval to proceed to Low Rate Initial Production. The Secretary of Defense Certification for the June 1991 Nunn-McCurdy breaches was granted on 12 September 1991. The FMTV production contract was awarded to Stewart & Stevenson Services Inc. of Houston, TX on 11 October 1991. This is a five-year multiyear fixed price contract with an escalation clause which procures 10,843 trucks and includes option provisions. The new production facility is located in Sealy, TX.

b. Significant Developments Since Last Report --
A revised Acquisition Program Baseline incorporating the results of contract award into the program was approved by the Army Acquisition Executive on 29 January 1992. In March 1992, the FMTV program was selected by Congress as one program for the prime/sub-contractor "Mentor-Protege" program to develop Small and Disadvantaged Businesses as qualified subcontractors. The Air Force provided production funding for the FMTV in May 1992, and a Memorandum of Understanding (MOU) between PEO, Combat Support and Marine Corps Systems Command (MCSYSCOM) for an FMTV-based Marine Corps Medium Tactical Vehicle Replacement program was signed. The Second basic year (FY92) Call-up was awarded on 26 June 1992 for 1197 vehicles. The newly constructed FMTV production facility in Sealy, TX was opened on 7 July 1992. A sole-source R&D contract was awarded to Stewart & Stevenson on 30 September 1992 to build and test hardware, as well as develop the drawing package for the deferred Medium Tactical Vehicle fuel tanker, expansible van, and trailers. These models will be incorporated into the competitive FMTV rebuy solicitation scheduled for FY95. The production facility was completed in December 1992.

The FMTV system is expected to satisfy mission requirements.

7b. Program Highlights (Cont'd):

c. Changes Since As Of Date --
In January 1993 Ft. Bragg, NC was confirmed as the location of the Initial Operational Test and Evaluation (IOT&E) instead of Ft. Hood, TX by the General Officer Test Schedule and Review Committee. Production line start-up occurred in January 1993. The decision to delay operational testing until completion of 8000 miles per Initial Production Test (IPT) vehicle caused anticipated slippage in start of IOT&E beyond the current Approved Program Baseline (APB) threshold. A Program Deviation Report and a revised APB were submitted to the AAE on 18 February 1993. The new APB was approved on 12 May 1993.

The FY94 President's Budget reductions will cause the restructuring of delivery quantities (adjustment to the funded delivery period) for the current multi-year contract.

8. Threshold Breaches:
There are no breaches to the approved Acquisition Program Baseline dated 12 May 1993. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I/II (ASARC)	AUG 87	MAY 87	MAY 87
Joint Service Operational Requirement (JSOR) Approval	NOV 87	N/A	NOV 87
DAB Program Review	N/A	MAY 88	MAY 88
Prototype Contract Awards	OCT 88	OCT 88	OCT 88
First Prototype Delivery	DEC 89	JAN 90	JAN 90
FSD Development Testing			
Start	DEC 89	JAN 90	JAN 90
Complete	OCT 90	DEC 90	DEC 90
Early User Test and Evaluation			
Start	MAY 90	MAY 90	MAY 90
Complete	OCT 90	OCT 90	OCT 90
ASARC IIIA	JAN 91	SEP 91	SEP 91
Production Award (MYP)	JAN 91	OCT 91	OCT 91
Call up 2nd Year of MYP	N/A	AUG 92	AUG 92
Production Qualification Test (PQT)			
Start	N/A	MAY 92	JUL 92
Complete	N/A	NOV 92	DEC 92(Ch-1)
First Production Delivery	MAR 92	MAY 93	MAY 93(Ch-2)

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Initial Production Test (IPT)			
Start	MAR 92	MAY 93	MAY 93(Ch-3)
Complete	OCT 92	FEB 94	FEB 94(Ch-3)
IOT&E			
Start	N/A	SEP 93	SEP 93(Ch-3)
Complete	N/A	MAR 94	MAR 94(Ch-3)
Call Up 3rd Year of MYP Increment 1	N/A	JUN 93	JUN 93(Ch-3)
ASARC IIIB	N/A	SEP 94	SEP 94(Ch-3)
Call Up 3rd Year of MYP Increment 2	N/A	NOV 94	NOV 94(Ch-3)
First Unit Equipped (FUE)/Initial Operational Capability (IOC)-FMTV	DEC 92	OCT 94	OCT 94(Ch-3)
Call up 4th Year of MYP	N/A	NOV 94	NOV 94(Ch-3)
Call Up 5th Year of MYP	N/A	NOV 95	NOV 95(Ch-3)
Production Decision Review Van, Tanker, & Trailer	N/A	JUN 96	JUN 96(Ch-3)
PQT, Van & Tanker			
Start	N/A	NOV 97	NOV 97(Ch-3)
Complete	N/A	DEC 97	DEC 97(Ch-3)
IPT, Van & Tanker			
Start	N/A	FEB 98	FEB 98(Ch-3)
Complete	N/A	OCT 98	OCT 98(Ch-3)
IOT&E, Van & Tanker			
Start	N/A	APR 98	APR 98(Ch-3)
Complete	N/A	AUG 98	AUG 98(Ch-3)
PQT, Trailer			
Start	N/A	NOV 02	NOV 02(Ch-3)
Complete	N/A	DEC 02	DEC 02(Ch-3)
IPT Trailer			
Start	N/A	FEB 03	FEB 03(Ch-3)
Complete	N/A	OCT 03	OCT 03(Ch-3)
IOT&E, Trailer			
Start	N/A	APR 03	APR 03(Ch-3)
Complete	N/A	AUG 03	AUG 03(Ch-3)

1/ Group A Vehicles: LMTV Cargo, MTV Cargo, Long Wheel Base Cargo, Tractor and Wrecker.
2/ Group B Vehicles: LMTV Van, MTV Expansible Van, Dump Truck and Fuel Tanker.
3/ The previously combined milestones for van, tanker and trailer are deleted and replaced with milestones for van and tanker, and delayed milestones for trailer. Due to affordability issues, the funding profile for FMTV has caused delay in trailer acquisition and associated testing milestones.

9b. Schedule (Cont'd):

b. Previous Change Explanations --

As a result of PL 101-189, 29 November 1989, "Low Rate Initial Production" (LRIP) the FMTV was restructured into a two-step decision for LRIP and Full Rate Production. Per OUSD(A) letter dated 9 February 1990, an ASARC review will replace the DAB for the FMTV program LRIP and Full Rate decisions. A joint FUE/IOC for FMTV was reestablished due to the validation of the 2 1/2 T (i.e. LMTV) variant. Reduced funding for the FMTV program required an amendment to the solicitation, which delayed most of the subsequent milestones by one to two months. The reduced funding resulted in restructuring of the model mix, and deletion of the separate model (Group A/Group B) designations. The call up for increment 2 of the 3rd year multiyear procurement (MYP) was established at 90 days following completion of IPT. Additional testing milestones were added to the APB for the 2nd MYP models (van, tanker, and trailer), which were moved to second and subsequent buys as a result of the funding reduction in the budget. The final ASARC IIIA milestone review was delayed until 10 June 1991, and all subsequent milestones where adjusted accordingly. PQT testing dates changed, and duration increased from a three months to seven months.

The delay in ASARC IIIA from June 1991 to September 1991 caused delays in subsequent milestones. Due to changes in the FMTV funding profile for FY92, trailer production was delayed. The revised Approved Program Baseline dated 29 January 1992 reflected these changes.

c. Current Change Explanations --

(Ch-1) The date for completion of PQT was scheduled for November 1992 but was actually completed in December 1992.

(Ch-2) The contractor was unable to complete technical data in time for scheduled production. This delay caused first production deliveries to slip from October 1992 to May 1993.

(Ch-3) The Operational Test Readiness Review (OTRR 2) concluded on 5 February 1993 that IOT&E should be delayed until at least 8000 miles of IPT have been run on the RAM vehicles. This won't be completed until July 1993. IPT Start and Complete were November 1992 and August 1993 respectively and are now May 1993 and February 1994 respectively. Therefore, IOT&E Start and Complete were June 1993 and November 1993 respectively and are now September 1993 and March 1994 respectively. This delay in testing will cause the Milestone III decision, ASARC III to be delayed from the previous estimate of March 1994, to the current estimate of September 1994. Subsequent multiyear

9c. **Schedule (Cont'd):**
procurement call-ups and testing dates are changed accordingly.

d. References --

Development Estimate:
DAE Program Baseline, Mar 1989; SDDM decision 7 Oct 1988.

Approved Program:
AAE Approved Acquisition Program Baseline dated 12 May 1993.

10. **Performance Characteristics:**

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Highway Speed on 2% Grade at GVW (mph)	55	55 / 55	TBD	55
Highway Speed on 3% Grade at GVW (mph)	45	45 / 45	TBD	45
Highway Speed on 2% Grade at GCW (mph)	40	40 / 40	TBD	40
Highway Speed on 3% Grade at GCW (mph)	30	35 / 30	TBD	35
LMTV Payload (tons)	2.5	2.5 / 2.5	TBD	2.5
MTV Payload (tons)	5	5 / 5	TBD	5
LMTV Towed Load (lbs)	7500	7500 / 7500	TBD	7500
MTV Towed Load (lbs)	20000	21000 / 21000	TBD	21000
Longitudinal Grade Operation (%)	60	60 / 60	TBD	60
Slide Slope Operation (%)	30	30 / 30	TBD	30
Fording Without Kit (inches)	30	30 / 30	TBD	30
Fording With Kit (inches)	60	60 / 60	TBD	60
Operating Range-on Integral Fuel at GCW (miles)	300	300 / 300	TBD	300
Reliability:				
MMBHMF (miles)				
Truck, Cargo (LMTV)	2140	3000 / 2450	TBD	3000
Truck, Cargo (MTV)	1600	2700 / 1950	TBD	2700
Tractor	3300	3300 / 2600	TBD	3300
Wrecker	2300	2300 / 2000	TBD	2300
Trailer (LMTV)	2800	2800 / 1985	TBD	2800
Trailer (MTV)	2600	2600 / 1600	TBD	2600

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
MMBOMF (miles)				
Truck, Cargo (LMTV)	1605	2228 / 1832	TBD	2228
Truck, Cargo (MTV)	1200	2035 / 1446	TBD	2035
Tractor	2500	2480 / 1960	TBD	2480
Wrecker	1900	1875 / 1500	TBD	1875
Trailer (LMTV)	2100	2056 / 1489	TBD	2056
Trailer (MTV)	1900	1913 / 1200	TBD	1913
MMHPOM				
Truck, Cargo (LMTV)	.011	0.01 / 0.011	TBD	0.01
Truck, Cargo (MTV)	.012	0.011 / 0.012	TBD	0.011
Tractor	.0135	0.012 / 0.015	TBD	0.012
Wrecker	.017	0.015 / 0.018	TBD	0.015
Trailer (LMTV)	.004	0.003 / 0.005	TBD	0.003
Trailer (MTV)	.004	0.003 / 0.005	TBD	0.003
Transportability:				
Surface Transportation (Highway, Ship & Rail)	H,S & R	H,S&R / H,S&R	TBD	H,S&R
Air Transportation	C-141	C-141 / C-141	TBD	C-141
Mobility: (vehicle cone index)				
Truck Cargo	25	25 / 25	TBD	25
Truck & Trailer Combination	35	35 / 35	TBD	35

MMBHMF - Mean Miles Between Hardware Mission Failure
MMBOMF - Mean Miles Between Operational Mission Failure
MMHPOM - Maintenance Man Hour/Operating Mile
GVW - Gross Vehicle Weight
GCW - Gross Combined Weight

Production vehicles have not yet been accepted or tested, therefore demonstrated performance values are not yet available.

b. Previous Change Explanations --

Values had been changed from development estimate values to production values as identified in the solicitation for the FMTV production contract. The Dec 91 SAR identified changes in specifications from the previous SAR, due to production values and

10b. Performance Characteristics (Cont'd):
contract specifications reflecting the FMTV program as of contract award, and supported in the Acquisition Program Baseline dated 29 January 1992.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
DAE Program Baseline, Mar 1989; SDDM decision 7 Oct 1988.

Approved Program:
AAE Approved Acquisition Program Baseline dated 12 May 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	57.9	164.8	175.8
Procurement	6567.4	10197.2	10247.3
Rollaway	(6089.0)		(9568.6)
Other Wpn Sys Cost	(239.3)		(628.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(239.1)		(50.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	6625.3	10362.0	10423.1
Escalation	1943.3	11292.2	6748.0
Development (RDT&E)	(2.0)	(65.4)	(50.1)
Procurement	(1941.3)	(11226.8)	(6697.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	8568.6	21654.2	17171.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	118995	112322	112322
Total	118995	112322	112322

Note: Excludes 147 RDTE prototypes from the SAR Baseline and 147 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

11d. Total Program Cost and Quantity (Cont'd):

d. Nuclear Costs -- None.

e. References --

Development Estimate:
DAE Program Baseline, Mar 1989; SDDM decision 7 Oct 1988.

Approved Program:
AAE Approved Acquisition Program Baseline dated 12 May 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	17171.1	20559.6	17171.1
(2) Quantity	112322	112322	102050
(3) Unit Cost	0.153	0.183	0.168
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	254.6	254.6	28.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	254.6	254.6	28.1
(2) Quantity	1885	1885	256
(3) Unit Cost	0.135	0.135	0.110

The Program Acquisition quantity of 112322 consists of 102050 trucks and 10272 trailers.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	59.9	8508.7	0.0	8568.6
Previous Changes:				
Economic	+1.7	+1148.4	-	+1150.1
Quantity	+141.1	+3492.6	-	+3633.7
Schedule	-11.2	+1019.3	-	+1008.1
Engineering	-	-	-	-
Estimating	+33.2	+5425.3	-	+5458.5
Other	-	-	-	-
Support	-	+740.6	-	+740.6
Subtotal	+164.8	+11826.2	-	+11991.0
Current Changes:				
Economic	-16.5	-3409.9	-	-3426.4
Quantity	-	-	-	-
Schedule	+4.7	+63.0	-	+67.7
Engineering	-	-	-	-
Estimating	+13.0	+16.7	-	+29.7
Other	-	-	-	-
Support	-	-59.5	-	-59.5
Subtotal	+1.2	-3389.7	-	-3388.5
Total Changes	+166.0	+8436.5	-	+8602.5
Current Estimate	225.9	16945.2	-	17171.1

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	57.9	6567.4	0.0	6625.3
Previous Changes:				
Quantity	+83.6	+1107.9	-	+1191.5
Schedule	-	-321.6	-	-321.6
Engineering	-	-	-	-
Estimating	+21.9	+2672.7	-	+2694.6
Other	-	-	-	-
Support	-	+252.2	-	+252.2
Subtotal	+105.5	+3711.2	-	+3816.7
Current Changes:				
Quantity	-	-	-	-
Schedule	+1.4	-0.1	-	+1.3
Engineering	-	-	-	-
Estimating	+11.0	+20.7	-	+31.7
Other	-	-	-	-
Support	-	-51.9	-	-51.9
Subtotal	+12.4	-31.3	-	-18.9
Total Changes	+117.9	+3679.9	-	+3797.8
Current Estimate	175.8	10247.3	-	10423.1

For purposes of the SAR, Federal Retail Excise Tax (FRET) will continue to be considered a non-rollaway (Support) cost.

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Additional R&D quantities due to change from 15 to 30 year program.

Schedule: Synchronized future prototype phase with production schedule.

Estimating: Increase in cost of testing; revised testing and engineering costs; increase in estimate of prototype hardware; current and prior year inflation offset; additional testing for tankers,

13b. Cost Variance Analysis (Cont'd):
vans and trailers.

Procurement

Economic: Revised escalation indices; economic adjustment for negative program change.

Quantity: Implementation of Tactical Wheeled Vehicle Modernization Plan (TWVMP) extended program from 15 to 30 years, and decrease in trailer quantity; revision of model mix IAW TWVMP.

Schedule: Trucks rescheduled for purchase in later years and model mix changes; change in average truck and trailer cost due to change in schedule; adjustments incorporated from the contract award.

Estimating: Reduction of excess warranty costs and change from conventional to level pricing on total rollaway cost; additional testing requirements; increased estimate based on M939A2 award; current and prior year inflation offset; adjustments for actual contract prices; additional cost for testing included in contract award.

Support: Support, testing and additional contracts, System Technical Support, Federal Retail Excise Tax (FRET) and additional spares due to extended program; total Package Fielding/First Destination Transportation (TPF/FDT) added per Congressional ruling; adjustments in FRET due to change in model mix; update initial spares to align with President's Budget and reduction of wholesale requirements; PM salaries transferred from OMA Appn; increase in PM salaries; decrease in TPF/FDT due to revised fielding plan; change in variants requiring FRET; added OCONUS/CONUS tech support and NET.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-16.5
Shift of RDT&E funding from FY98 & FY99 to FY00 & FY01 to align with President's Budget causes shortfall to optimum schedule (Schedule)	+1.4	+4.7

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Current & prior year inflation offset (Estimating)	+0.5	+0.5
Additional testing of new variants (Estimating)	+10.5	+12.5
RDT&E Subtotal	+12.4	+1.2
(2) Procurement		
Revised escalation indices (Economic)	N/A	-3412.0
Adjustment for Negative Program Change (Economic)	N/A	+2.1
Change in the procurement buy schedule for LMTV models (cost of buying more expensive models later in the program) (Schedule)	-0.2	+20.5
Change in the procurement schedule for MTV models (cost of buying more expensive models later in the program) (Schedule)	+0.1	+42.5
Adjustment for changes in model mix (Estimating)	+12.1	+6.4
Current & prior year inflation offset (Estimating)	+8.6	+10.3
Current & prior year inflation offset (Support)	+0.7	+0.9
Reduced initial spares requirement due to qty reduction and model mix change (Support)	-21.3	-26.5
Reduced Other Weapon system costs due to qty decrease and model mix change (Support)	-35.5	-41.9
Increased PM salaries (Support)	+4.4	+5.5
Adjustment in Total Package Fielding (Support)	-0.2	+2.5
Procurement Subtotal	-31.3	-3389.7

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.072	-0.020	0.036	0.010	--	0.049	--	0.006	0.081	0.153

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

FMTV:	Initial Contract Price Target	Ceiling	Qty
Stewart & Stevenson Serv., Houston, TX DAAE07-92-C-R001, FP/EPA Award: October 11, 1991 Definitized: October 11, 1991	$1196.2	N/A	10843

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1196.2	N/A	10843	$1196.2	$1196.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

Cost and performance reporting is not required on this FP/EPA contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 17.6% (6 yrs/34 yrs)

(2) Percent Program Cost Appropriated: 3.4% ($576.6 / $17171.1)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY88-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2021)	Total
RDT&E	74.1	3.7	6.5	141.6	225.9
Procurement	502.5	28.1	385.4	16029.2	16945.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	576.6	31.8	391.9	16170.8	17171.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1988				9.9	9.8	9.8	9.8	3.0
1989				26.3	27.0	26.3	26.3	4.2
1990				18.3	19.5	18.3	18.3	4.0
1991				9.6	10.6	9.6	2.2	4.3
1992				6.3	7.2	6.3	0.9	2.8
1993								2.4
1994				3.1	3.7			2.4
1995				5.3	6.5			2.3
1996				1.4	1.8			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)								
1997				1.4	1.8			2.2
1998				1.4	1.8			2.2
1999				1.3	1.7			2.2
2000				34.7	47.2			2.2
2001				27.0	37.5			2.2
2002								2.2
2003								2.2
2004								2.2
2005								2.2
2006								2.2
2007								2.2
2008								2.2
2009				15.2	25.1			2.2
2010				14.6	24.7			2.2
Subtot				175.8	225.9	70.3	57.5	

The Amended President's Budget funding constraints in FY98 and FY99 caused restructure of the RDT&E program in FY00 and FY01.

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2035 Other Procurement, Army								
1991	277	15.6	35.2	58.1	66.3	64.9	10.8	4.3
1992	1197	7.3	125.6	155.5	181.6	166.5	18.7	2.8
1993	1885	9.7	191.5	213.0	254.6	0.7		2.4
1994	256	1.5	19.1	23.1	28.1			2.4
1995	3357	1.8	291.8	309.6	385.4			2.3
1996	3871	1.8	283.8	301.4	383.5			2.3
1997	2389	16.9	234.2	256.9	334.1			2.2
1998	2372	2.2	239.4	248.5	330.3			2.2
1999	4050	2.0	385.7	398.4	541.1			2.2
2000	4443	1.9	346.5	372.5	517.0			2.2
2001	5152	9.6	451.0	484.2	686.9			2.2
2002	4267	15.3	350.9	394.5	572.0			2.2
2003	4503	1.7	365.8	403.2	597.5			2.2
2004	4533	1.7	360.6	389.2	589.4			2.2
2005	4770	1.7	372.9	402.2	622.5			2.2
2006	3058	9.6	252.0	281.9	445.9			2.2
2007	3751	15.3	238.1	279.1	451.2			2.2
2008	3749	1.7	302.9	334.4	552.5			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2035 Other Procurement, Army (Cont'd)								
2009	4212	1.7	341.7	372.2	628.5			2.2
2010	7097	1.7	583.7	619.9	1069.8			2.2
2011	5684	9.6	499.4	539.1	950.7			2.2
2012	2255	15.3	168.4	205.8	371.0			2.2
2013	4747	1.7	300.9	332.5	612.5			2.2
2014	4679	1.7	376.6	401.8	756.4			2.2
2015	6385	1.7	517.4	548.2	1054.7			2.2
2016	4645	9.6	441.3	477.2	938.3			2.2
2017	1669	15.3	153.6	190.8	383.4			2.2
2018	3503	1.7	317.7	347.9	714.5			2.2
2019	4340	1.7	384.9	410.8	862.3			2.2
2020	5226	2.4	454.6	484.3	1038.9			2.2
2021				11.1	24.3			2.2
Subtot	112322	181.4	9387.2	10247.3	16945.2	232.1	29.5	
Grand Total	112322	181.4	9387.2	10423.1	17171.1	302.4	87.0	

Expenditures and obligations reflect program office records as of 31 March 1993.

17. Production Rate Data:

a. Production Baseline Rate

The ASARC Milestone Decision IIIA approval for low rate initial production did not establish annual production rates. Current production rate quantities are reflected in section 16 c.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	28.1	28.1	401.9	0.0	+373.8
Procurement Qty	256	256	3695	0	+3439
Proc. Unit Cost	0.110	0.110	0.109	0.000	-0.001
FY 1995					
Procurement Cost	385.4	385.4	385.4	0.0	0.0
Procurement Qty	3357	3357	3357	0	0
Proc. Unit Cost	0.115	0.115	0.115	0.000	0.000
Balance of Proc. (FY 1996 to Complete)	16029.2	16029.2	16403.0	0.0	+373.8

The cost and quantity data reflects the FMTV program as governed by the current 5-year multiyear contract.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	60/60
Procurement	0/0

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The average miles/vehicle/year for the LMTV truck is 3,324 miles; the MTV truck is 6,006 miles; the LMTV trailer is 1,725 miles; the MTV trailer is 3,000 miles. The average years of operation (useful life) is 20 years. The dedicated crew/vehicle/year for LMTV trucks is .1 annual manyears per vehicle; for MTV trucks is .25 annual manyears per vehicle. Dedicated crew is not applicable for trailers. The current Baseline Cost Estimate dated April 1991 was used to develop

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per LMTV	None
Personnel	3.9	N/A
O&S Consumables	3.2	N/A
Direct Depot Maint	0.0	N/A
Sustaining Investment	0.1	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	1.5	N/A
Total	8.7	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Other	0.5	---	---	---	0.5
Total	0.5	---	---	---	0.5

18. b. Costs--

(FY89 Constant [Base-Year] Dollars in Thousands)

Cost Element	Avg Annual Cost/MTV	Avg Annual Cost/LMTV Trailer	Avg Annual Cost/MTV Trailer
Personnel	6.93	1.10	1.23
O&S Consumables	7.72	0.18	0.37
Direct Depot Maint	0.06	0.00	0.00
Sustaining Investment	0.09	0.01	0.01
Other Direct Costs	0.10	0.00	0.00
Indirect Costs	2.90	0.34	0.38
Total	17.80	1.63	1.99

A-24 PLS

92-141

OK

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: PLS (FHTV)

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
Palletized Load System (PLS)/Family of Heavy Tactical Vehicles (FHTV)

CLEARED
FOR OPEN PUBLICATION

MAY 26 1993

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

2. DoD Component: Army

Joint Participants:
None

3. Responsible Office and Telephone Number:
U.S. Army, Program Executive Office for Combat Support
ATTN: SFAE-CS-TVH (COL Stoddart)
Warren, MI 48397-5000

COL WILLIAM J. STODDART
Assigned: June 5, 1989
AV 786-5800 COMM (313) 574-5800

4. Program Elements/Procurement Line Items:

RDT&E:
PE 64622 Project D659
PROCUREMENT:
APPN 2035 ICN D16500 (Army)
APPN 2035 ICN DV0020 (Army)
APPN 2035 ICN DV0410 (Army)
APPN 2035 ICN DV0420 (Army)

No SECURITY Objection to PUBLIC RELEASE

25 MAY 1993

SECURITY REVIEW, ODCSINT, HQDA

5. Related Programs: None.

*** UNCLASSIFIED ***

93-687

6. Mission and Description:
The Palletized Load System (PLS) program is comprised of a 16.5 ton tactical truck with trailer and flatracks (demountable cargo beds). The PLS employs the maximum practical use of commercial components. Each truck/trailer combination is provided with a common flatrack. The PLS trailer has a cargo capacity equal to that of the prime mover. The PLS program accommodates two mission oriented configurations: with and without a material handling crane, and kit applications in order to satisfy currently existing individual Army ground transportation requirements in the specified payload range. Flatrack interoperability with the equipment of European forces is a requirement. The PLS is a key transportation component of the Maneuver Oriented Ammunition Distribution System (MOADS) in support of the field artillery.

7. Program Highlights:
a. Significant Historical Developments --
The PLS program conducted a successful Organizational/Operational conceptual evaluation at Ft. Lewis, WA in 1984. Force Development Test and Experimentation was conducted in late 1986 at Ft. Hood, TX.

Following this success, the Army Systems Acquisition Review Council (ASARC) approved the program in May 1987. Congressional guidance stipulated that the program receive Non-Developmental Item (NDI) determination, that manufacture and assembly occur in the U.S.A., and that authority for source selection would be vested in the Department of the Navy. The Request for Proposal for the prototype phase was released to three competing contractors in November 1988, and three contracts were awarded in January 1989. The contractors receiving awards were GM-MVO, Oshkosh Truck Corporation and PACCAR Government Group. A formal request was made of Congress in July 1989 for an extension to the original December 1989 deadline for selection of the production source until June 1990. This extension was approved in the FY90/91 Defense Authorization Act. The first prototype vehicle was delivered in August 1989, and testing proceeded on schedule.

A Memorandum of Understanding has been executed with Great Britain and Germany to ensure interoperability of PLS flatracks with their comparable systems. Technical data has been exchanged between the three parties to define the necessary interfaces. The British flatrack was successfully tested on the U.S. PLS during the prototype phase. The German flatrack will be evaluated when it is available.

On 10 September 1990 the Milestone IIIA Defense Acquisition Board (DAB) approved PLS for Low Rate Initial Production (LRIP). In July 1990, Oshkosh Truck Corp. was selected as the apparent successful bidder for the PLS solicitation. A five-year multiyear contract was awarded to Oshkosh on 28 September 1990. A quarterly exception SAR was submitted for 30 September 1990 to report Nunn-McCurdy breaches

7a. Program Highlights (Cont'd):

in accordance with public law. The Secretary of the Army notified Congress on 13 November 1990 that breaches had occurred in both Current Procurement Unit Cost (CPUC) for trucks, trailers and flatracks, and the Program Acquisition Unit Cost (PAUC) for trailers and flatracks, as a result of repricing the reduced program quantities with the prices from the contract. Secretary of Defense certification was submitted to Congress on 13 December 1990. The Acquisition Program Baseline, dated 31 October 1990, was approved and established costs in FY91 Base Year Dollars (previous base year was FY89).

Oshkosh Truck Corp. applied to the Internal Revenue Service for and received exemption from Federal Retail Excise Tax (FRET) due to its off-road tactical mission.

An enhanced flatrack program was initiated and will be incorporated into current production, as directed by Congress. This will enhance sealift capability.

The Test and Evaluation Master Plan (TEMP) was approved by OSD (Dir of Op Test & Eval) in November 1991.

b. Significant Developments Since Last Report --
On 14 December 1992, the PLS ASARC was successfully conducted for the Milestone III Decision. The Acquisition Decision Memorandum (ADM) was signed on 16 December 1992 authorizing full rate production with conditional type classification - standard, subject to submittal of the Beyond-LRIP Report to Congress. The Production Acquisition Program Baseline (APB) for PLS was approved on 28 December 1992.

The PLS system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
RDT&E funds have been approved for development of a PLS tanker. The Beyond LRIP Report was sent to Congress on 30 April 1993, allowing award of the 4th Program Year call-up on 30 April 1993.

8. Threshold Breaches:
There are no breaches to the Approved Acquisition Program Baseline dated 28 December 1992 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development Estimate	Approved Program;PdE	Current Estimate
Milestone I/II (ASARC)	MAY 87	MAY 87	MAY 87
ROC Approval	NOV 87	NOV 87	NOV 87
DAB Program Review	MAY 88	MAY 88	MAY 88
Prototype Contract Awards (3 Contractors)	JAN 89	JAN 89	JAN 89
First Prototype Delivery	AUG 89	AUG 89	AUG 89
FSD Development Testing			
Start	SEP 89	JAN 90	SEP 89
Complete	SEP 89	SEP 89	SEP 89(Ch-1)
Early User Test and Experimentation Testing			
Start	DEC 89	JAN 90	JAN 90
Complete	FEB 90	MAR 90	MAR 90
Milestone IIIA (DAB)	APR 90	SEP 90	SEP 90
Production Award	APR 90	SEP 90	SEP 90
Pre-Shakedown Test			
Start	N/A	JAN 91	JAN 91
Complete	N/A	MAR 91	MAR 91
Shakedown Test			
Start	N/A	JUL 91	JUL 91
Complete	N/A	DEC 91	DEC 91
First Production Delivery	JAN 91	JAN 92	JAN 92
Initial Production Test			
Start	JAN 91	JAN 92	JAN 92
Complete	AUG 91	OCT 92	OCT 92
IOT&E			
Start	N/A	MAY 92	MAY 92(Ch-2)
Complete	N/A	AUG 92	AUG 92(Ch-2)
Milestone IIIB (ASARC)	N/A	NOV 92	DEC 92(Ch-2)
First Unit Equipped (FUE)	JAN 92	AUG 93	AUG 93(Ch-2)
Initial Operating Capability (IOC)	JAN 92	SEP 93	SEP 93(Ch-2)

b. Previous Change Explanations --

Shakedown Test was delayed and expanded, which also caused changes to subsequent milestones. These delays did not exceed the APB thresholds.

c. Current Change Explanations --

(Ch-1) The FSD Development Testing was reduced to a three week test. The actual test completion date was September 1989 instead of March 1990.

9c. Schedule (Cont'd):
(Ch-2) Schedule changes reflect the Milestone III Decision APB dated 28 December 1992. IOT&E Start and Complete were April 1992 and May 1992, and are now May 1992 and August 1992; Milestone IIIB was November 1992 and is now December 1992; FUE and IOC were February 1993 and are now August 1993 and September 1993, respectively.

d. References --

Development Estimate:
DAE Program Baseline, Mar 1989; SDDM decision 7 Oct 1988.

Approved Program;PdE:
AAE Approved Acquisition Program Baseline dated 28 December 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program;PdE Objective/Threshold		Demonstrated Perf	Current Estimate	
Highway Speed on 2% Grade at GVW (mph)	50	50	/ 45	50	50/45	
Highway Speed on 2% Grade at GCW (mph)	35	35	/ 30	38	35/30	
PLS Truck/Trailer Load (tons)	16.5	16.5	/ 16.5	16.5	16.5	
Longitudinal Grade Operation (%)	30	30	/ 30	30	30	
Side Slope Operation (%)	30	30	/ 30	30	30	
Fording Capability (inches)	30	48	/ 30	48	48	(CH-1)
Operating Range on Integral Fuel at GCW (miles)	225	225	/ 225	266	225	
RELIABILITY						
Truck						
MMBHMF (miles)	1600	2250	/ 2250	3734	2250	
MMBOMF (miles)	1500	1500	/ 1500	2703	1500	
Trailer						
MMBHMF (miles)	1200	2280	/ 2280	11752	2280	
MMBOMF (miles)	1900	1900	/ 1900	7835	1900	
MHC						
MHBHMF (hours)	225	195	/ 195	432	195	(CH-1)
MHBOMF (hours)	150	150	/ 150	384	150	
MAINTENANCE RATIO						
TRUCK						
MMHPOM (Operational)	.018	0.015	/ 0.015	TBD	0.015	

10a. Performance Characteristics (Cont'd):

	DE	Approved Program;PdE Objective/Threshold		Demonstrated Perf	Current Estimate	
MMHPOM (Technical)	.016	0.013	/ 0.013	0.013	0.013	
Trailer						
MMHPOM (Operational)	.005	0.005	/ 0.005	TBD	0.005	
MMHPOM (Technical)	.004	0.004	/ 0.004	0.0021	0.004	
MHC						
MMHPOH (Operational)	.100	0.100	/ 0.100	0.059	0.100	
MMHPOH (Technical)	.083	0.083	/ 0.083	0.059	0.083	
TRANSPORTABILITY						
Surface Transportation (Highway, Ship & Rail)	(H,S&R)	(H,S&R)	/ (H,S&R)	TBD	(H,S&R)	
Air Transportation	C-141	C-141	/ C-141	C-141	C-141	
MOBILITY (Vehicle Cone Index)						
Truck with MHC	39	36	/ 39	33	36	(CH-1)
Truck without MHC	37	34	/ 37	33	34	(CH-1)
Truck & Trailer Combination	43	50	/ 50	39	50	

MMBHMF - Mean Miles Between Hardware Mission Failure
MMBOMF - Mean Miles Between Operational Mission Failure
MHBHMF - Mean Hours Between Hardware Mission Failure
MHBOMF - Mean Hours Between Operational Mission Failure
MMHPOM - Maintenance Man Hour/Operating Mile
MMHPOH - Maintenance Man Hour/Operating Hour
GVW - Gross Vehicle Weight
GCW - Gross Combined Weight
MHC - Materiel Handling Crane

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) Changes to the performance data result from the Milestone IIIB Decision on 28 December 1992. Fording Capability was 30 in. and is now 48 in.; Reliability for MHC was 225 hours and is now 195 hours; Mobility for truck with MHC was 39 and has improved to 36; truck without MHC was 37 and has improved to 34.

10d. Performance Characteristics (Cont'd):

d. References --

Development Estimate:
DAE Program Baseline, Mar 1989; SDDM decision 7 Oct 1988.

Approved Program;PdE:
AAE Approved Acquisition Program Baseline dated 28 December 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program;PdE	Current Estimate
Development (RDT&E)	44.1	44.0	44.9
Procurement	1922.9	1521.7	1034.1
Recurring Production	(1751.7)		(971.3)
Non-recurring Production	(11.2)		(28.9)
Total Rollaway	(1762.9)		(1000.2)
Other Wpn Sys Cost	(89.3)		(21.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(70.7)		(12.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 93 Base-Year $	1967.0	1565.7	1079.0
Escalation	29.9	129.6	43.9
Development (RDT&E)	(-5.1)	(-4.5)	(-4.2)
Procurement	(35.0)	(134.1)	(48.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1996.9	1695.3	1122.9

The Development Estimate has been converted from FY91 to FY93 Base-Year $ to reflect the Production Acquisition Program Baseline approved at Milestone IIIB. The escalation deflator used to convert from FY91 to FY93 $ was 1.065 for both RDT&E and Procurement.

b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	4333	3386	2691
Total	4333	3386	2691

Note: Excludes 27 RDTE prototypes from the SAR Baseline and 27 from the Current Estimate that are not considered fully configured.

11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales/International Cooperative Programs -- Although PLS is not an International Cooperative Program in the formal sense, a Memorandum of Understanding has been made with Great Britain and Germany to ensure interoperability of PLS flatracks with their comparable systems.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
DAE Program Baseline, Mar 1989; SDDM decision 7 Oct 1988.

Approved Program;PdE:
AAE Approved Acquisition Program Baseline dated 28 December 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1122.9	1418.6	1122.9
(2) Quantity	2691	3462	2691
(3) Unit Cost	0.417	0.410	0.417
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	310.4	310.4	466.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	310.4	310.4	466.4
(2) Quantity	961	961	945
(3) Unit Cost	0.323	0.323	0.494

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.0	1957.9	0.0	1996.9
Previous Changes:				
Economic	+0.1	+119.5	-	+119.6
Quantity	-	-715.3	-	-715.3
Schedule	+5.5	+43.1	-	+48.6
Engineering	-	-	-	-
Estimating	-2.6	+55.7	-	+53.1
Other	-	-	-	-
Support	-	-84.3	-	-84.3
Subtotal	+3.0	-581.3	-	-578.3
Current Changes:				
Economic	+0.2	-34.6	-	-34.4
Quantity	-	-319.6	-	-319.6
Schedule	-	-0.7	-	-0.7
Engineering	+2.2	+147.8	-	+150.0
Estimating	-3.7	-47.5	-	-51.2
Other	-	-	-	-
Support	-	-39.8	-	-39.8
Subtotal	-1.3	-294.4	-	-295.7
Total Changes	+1.7	-875.7	-	-874.0
Current Estimate	40.7	1082.2	-	1122.9

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	44.1	1922.9	0.0	1967.0
Previous Changes:				
Quantity	-	-605.4	-	-605.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.6	+42.7	-	+45.3
Other	-	-	-	-
Support	-	-86.8	-	-86.8
Subtotal	+2.6	-649.5	-	-646.9
Current Changes:				
Quantity	-	-293.2	-	-293.2
Schedule	-	-0.2	-	-0.2
Engineering	+2.2	+138.8	-	+141.0
Estimating	-4.0	-45.4	-	-49.4
Other	-	-	-	-
Support	-	-39.3	-	-39.3
Subtotal	-1.8	-239.3	-	-241.1
Total Changes	+0.8	-888.8	-	-888.0
Current Estimate	44.9	1034.1	-	1079.0

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Estimating: Miscellaneous reductions for bill payers; revised estimate for Technical Data Package and other efforts; reprogramming to Family of Medium Tactical Vehicles.

Procurement

Economic: Revised escalation indices.

Quantity: Revised engineering, test and QA/test support efforts; increased quantity of storage flatracks.

Schedule: Army force structure reductions; change in flatrack procurement schedule.

13b. Cost Variance Analysis (Cont'd):

Estimating: Revised engineering, test and QA/test support efforts; Gov't estimated prices replaced with actual contract prices; correction to previous variance to reconcile rollaway and support costs; decrease in System Technical Support; increases in testing, quality assurance and engineering; former Federal Retail Excise Tax (FRET) funding awaiting below threshold reprogramming; contract program level pricing changed constant dollar totals.

Support: Reduced initial spares and change in cost elements for FRET and STS; IRS Revenue Ruling waived FRET for PLS; realignment of Initial Spares; inclusion of Total Package Fielding/First Destination Transportation; PM salaries transferred from OMA Appn.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	N/A	+0.2
Redesign of enhanced flatrack (Engineering)	+2.2	+2.2
Current & prior year inflation offset (Estimating)	-0.2	-0.2
Below threshold reprogramming for bill payers (Estimating)	-4.7	-4.4
Revised Tech Dat Pkg (Estimating)	+0.9	+0.9
RDT&E Subtotal	-1.8	-1.3
(2) Procurement		
Revised escalation indices (Economic)	N/A	-34.6
Current & prior year inflation offset (Estimating)	+6.4	+6.7
Reduced truck quantities from 3462 to 2691 due to change in program requirements (Quantity)	-196.8	-214.5
Reduced trailer quantities from 1441 to 1264 due to change in program requirements (Quantity)	-7.4	-8.1
Reduced flatrack quantities from 39771 to 28724 due to change in program requirements (Quantity)	-89.0	-97.0

13c. **Cost Variance Analysis (Cont'd):**

	(Dollars in Millions) Base-Year	Then-Year
Change in procurement schedule for trailers in FY90-95 (Schedule)	-0.2	-0.4
Change in procurement of flatracks in FY92-95 (Schedule)	--	-0.3
Incorporation of enhanced flatrack (Engineering)	+138.8	+147.8
Model mix change of trucks (Estimating)	-58.5	-60.7
Revised methodology calculating ECOs from 2.8% to 3% of unit manufacturing (Estimating)	-7.0	-8.2
Change in support cost from non-rollaway (Estimating)	+11.2	+11.5
Adjustment to system Technical Support which was reported as an engineering cost (Support)	-11.2	-11.5
Current & prior inflation offset (Support)	+0.2	+0.2
Modified System Proj Mgt and System Tests and Eval (Estimating)	+2.5	+3.2
Refinement of the ASL/PLL used to calculate the initial spares (Support)	-27.4	-29.1
Refinement of data requirements (Support)	-5.0	-4.8
Refinement of Total Package Fielding and Special Tools (Support)	+4.1	+5.4
Procurement Subtotal	-239.3	-294.4

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.461	0.032	-0.105	0.018	0.056	0.001	--	-0.046	-0.044	0.417

15. **Contract Information** (Then-Year Dollars in Millions):

a. Procurement --

Production PLS (FHTV):	Initial Contract Price Target	Ceiling	Qty
OSHKOSH TRUCK CORPORATION, OSHKOSH, WI DAAE07-90-C-R035, FP-EPA Award: September 28, 1990 Definitized: September 28, 1990	$859.6	N/A	14706

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$859.6	N/A	14706	$859.6	$859.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$0.0	$0.0
Net Change	$0.0	$0.0

Explanation of Change: None.

Cost and performance reporting are not required on this FP/EPA contract. Contract prices and the quantity of 14,706 reflect the total basic contract for trucks, trailers, and flatracks on the five-year multiyear contract.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 46.2% (6 yrs/13 yrs)

(2) Percent Program Cost Appropriated: 55.1% ($619.1 / $1122.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY88-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	40.7	-	-	-	40.7
Procurement	578.4	466.4	22.1	15.3	1082.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	619.1	466.4	22.1	15.3	1122.9

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1988				5.7	4.9	4.9	4.9	3.0
1989				31.4	28.2	28.0	28.0	4.2
1990				3.7	3.5	3.5	3.4	4.0
1991								4.3
1992				2.2	2.2	2.2	2.2	2.8
1993				1.9	1.9	0.9		2.4
Subtot				44.9	40.7	39.5	38.5	
Appropriation: 2035 Other Procurement, Army								
1990	81	10.2	27.3	38.4	37.3	37.1	23.4	4.0
1991	423	0.6	131.1	131.6	131.5	126.1	69.1	4.3
1992	281	2.6	93.0	97.0	99.2	84.3	0.8	2.8
1993	961	4.4	289.2	296.5	310.4	0.6		2.4
1994	945	4.4	423.7	437.4	466.4			2.4
1995		4.5	7.0	20.3	22.1			2.3
1996				3.9	4.3			2.3
1997								2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1998								2.2
1999								2.2
2000		2.2		9.0	11.0			2.2
Subtot	2691	28.9	971.3	1034.1	1082.2	248.1	93.3	
Grand Total	2691	28.9	971.3	1079.0	1122.9	287.6	131.8	

Expenditures and obligations reflect program office records as of 31 March 1993.

Fiscal Years which show recurring flyaway costs and no quantity reflect procurement of trailers or flatracks. Procurement quantities for trailers and flatracks are:

	Trailers	Flatracks
1990	82	339
1991	119	1776
1992	112	2323
1993	385	4198
1994	442	20088
1995	124	0
Total	1264	28724

17. Production Rate Data:

a. Production Baseline Rate

The ASARC Milestone Decision IIIB approval for full rate production did not establish annual production rates. Current production rate quantities are reflected in section 16 c.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	466.4	466.4	466.4	0.0	0.0
Procurement Qty	945	945	945	0	0
Proc. Unit Cost	0.494	0.494	0.494	0.000	0.000
FY 1995					
Procurement Cost	22.1	22.1	22.1	0.0	0.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	15.3	15.3	15.3	0.0	0.0

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	27/27
Procurement	555/555

RDT&E deliveries to date represent trucks only. There were also 18 trailers and 90 flatracks planned and delivered. Procurement deliveries are as of May 1993.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The average miles per vehicle year for the PLS with crane with winch is 3,000 miles; the PLS with crane without winch is 3,000 miles; the PLS without crane without winch is 4,900 miles; the trailer is 4,900 miles. The average Years of Operation (Useful Life) is 20 years. The dedicated Crew/Vehicle/Year for PLS trucks is 2.03 manyear/vehicle/year. There are no separately estimated Operating and Support Costs

18a. Operating and Support Costs (Cont'd):
for flatracks. The Baseline Cost Estimate dated September 1992 is the source of the costs in section 18 b.

b. Costs -- (FY 1993 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per PLS System	None
Personnel	41.3	N/A
O&S Consumables	8.6	N/A
Direct Depot Maint	0.0	N/A
Sustaining Investment	0.2	N/A
Other Direct Costs	0.3	N/A
Indirect Costs	6.1	N/A
Total	56.5	N/A

c. Contractor Support Costs -- None.

18. b. Costs--
(FY91 Constant [Base-Year] Dollars in Thousands)

Cost Element	Avg Annual Cost Per Trailer
Personnel	1.7
O&S Consumables	0.6
Direct Depot Maint	0.0
Sustaining Investment	0.0
Other Direct Costs	0.3
Indirect Costs	0.0
Total	2.6

N-20 JSOW

92-126

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JSOW

AS OF DATE: December 31, 1992

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1. (U) Designation and Nomenclature (Preferred Name):
Joint Standoff Weapon Program (JSOW), Baseline Weapon

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 25 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

2. (U) DoD Component: Navy

Joint Participants:
Air Force

3. (U) Responsible Office and Telephone Number:

Conventional Strike Weapons
PMA-201
Washington, DC 20361-1201
COMM (703)746-2634 X2449

CAPT R. L. RAMSAY, III
Assigned: April 7, 1989
AV DSN 286-2634

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604727N
PROCUREMENT:
APPN 1507 ICN 223000 (Navy)

[redacted]

[redacted]

[redacted]

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 1205NCN (Shared)

5. (U) Related Programs:
Sensor Fuze Weapon/BLU-108 (Submunition) and Joint Direct Attack Munition (JDAM).

6. (U) Mission and Description:

The JSOW is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW Global Positioning System (GPS)/Inertial Navigation System (INS) capability will allow several target kills per aircraft sortie. The Baseline will be integrated with Navy F/A-18, AV-8B, A-6 and A-X aircraft. A main focus of the JSOW development has been high payoff, low risk, low cost engineering solutions to effectively achieve both operational requirements and a low unit procurement cost. The program objective is to obtain an ample inventory of precision standoff weapons for use against the numerous less-than-high-value yet tactically significant targets which must be attacked in any given sustained conflict. The JSOW program will first develop a baseline weapon for use against fixed area targets. The baseline JSOW variant will include a kinematically efficient airframe, an integrated inertial/GPS navigation capability, and a BLU-97/B submunition payload. This weapon will be designed upfront for pre-planned product improvements (P3I) to enable the attack of blast/frag sensitive and moving point targets. The P3I variant will add a terminal seeker, a man-in-the-loop data link, and a unitary warhead. P3I will provide increased accuracy and lethality, and the capability for aimpoint selection, target discrimination, and bomb impact assessment. Acquisition agreements have been signed by the Air Force and Navy to integrate the BLU-108 SKEET submunition into the baseline JSOW. Additionally, the viability of a common midcourse guidance unit as well as a common seeker between JSOW and the Joint Direct Attack Munition (JDAM) is being examined. Through adherence to MIL STDs 8591 and 1760, and minimized weight and dimension considerations, JSOW will have considerable potential for compatibility with NATO aircraft.

This SAR reports only the JSOW Baseline weapon.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
The Navy Strike/Anti-Surface Warfare Master Plan clearly identifies the need to replace the current inventory of interdiction weapons (Mavericks, Laser Guided Bombs, Skipper, and Walleye) with a weapon possessing a point target kill capability as well as the need for a standoff submunition dispensing weapon with the area target effectiveness of ROCKEYE and Anti-Personnel/Anti-Materiel (APAM). The JSOW technical requirements have been generated by the shortcomings and expense of these existing systems. JSOW will take advantage of state of the art technological opportunities to achieve significant operational effectiveness improvements over these current weapons. The upfront design of the baseline JSOW System allows for pre-planned product improvements (P3I) to provide increased accuracy, enhanced kill capability, an expanded target set and man-in-the-loop data link. The original Acquisition Plan (AP), AP-88-21, was approved on 1 July 1988. The JSOW program reviewed by the Defense Acquisition Board (DAB) on 5 June 1989 and an Acquisition Decision Memorandum (ADM) dated 29 June 1989 granted Milestone-I approval to enter an 18 month Demonstration/Validation (DEM/VAL) phase for the baseline JSOW program and directed the Navy to develop a plan for P3I. The P3I program will commence in fiscal year 1994. The baseline JSOW program completed DEM/VAL in July 1991 and the Source Selection process in December 1991. JSOW successfully completed a MSII DAB 8 June 1992. The ADM directed commencement of the Engineering and Manufacturing Development (E&MD) Phase. It also changed the name of the program from Advanced Interdiction Weapon System (AIWS) to Joint Standoff Weapon (JSOW). Contracts were awarded to Texas Instruments for the Baseline JSOW E&MD effort (June 1992).

b. (U) Significant Developments Since Last Report --
Contract was awarded to MACAIR for aircraft integration in July 1992.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --
The JSOW program held the Preliminary Design Review (PDR) the week of 25 January 1993. The Design Review Board (DRB) found that TI made adequate technical progress in fulfilling requirements of the Engineering and Manufacturing Development (E&MD) contract with few exceptions. TI submitted closure plans for the DRB concerns in March 1993. A Subsequent Application Review (SAR) was held at Texas Instruments (TI) in March 1993 and the contractor was found to have implemented a validated management control system with no major exceptions.

8. (U) Threshold Breaches:
There are currently no DAE Approved Acquisition Program Baseline (dated 23 June 1992) breaches or Nunn McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I	JUN 89	JUN 89	JUN 89
DEMVAL Contract Award	JUN 89	JUN 89	JUN 89
Early Operational Assessment (OT-I)			
Start	MAR 91	MAR 91	MAR 91
Complete (Report)	OCT 91	OCT 91	OCT 91
Milestone II	APR 92	APR 92	JUN 92
E&MD Contract Award	MAY 92	MAY 92	JUN 92
Preliminary Design Review	NOV 92	NOV 92	JAN 93(Ch-1)
Critical Design Review	DEC 94	DEC 94	APR 95(Ch-4)
IOT&E (OT-IIA)			
Start	DEC 95	DEC 95	OCT 95(Ch-2)
Complete (Report)	JUL 96	JUL 96	AUG 96(Ch-2)
TECHEVAL (DT-IIC)			
Start	NOV 95	NOV 95	OCT 95(Ch-2)
Complete (Report)	JUL 96	JUL 96	AUG 96(Ch-2)
Functional Configuration Audit	OCT 95	OCT 95	DEC 95(Ch-1)
Production Verification Review	APR 96	APR 96	JUN 96(Ch-1)
Production Readiness Review	JUN 96	JUN 96	AUG 96(Ch-1)
LRIP Contract Option Exercised	OCT 96	OCT 96	DEC 96(Ch-1)
LRIP First Delivery	MAY 98	MAY 98	JUL 98(Ch-1)
OPEVAL (OT-IIB)			
Start	AUG 96	AUG 96	OCT 96(Ch-1)
Complete (Report)	JUL 97	JUL 97	SEP 97(Ch-1)
Organizational Level Support	APR 00	APR 00	JUN 00(Ch-1)
Intermediate Level Support	JUL 00	JUL 00	SEP 00(Ch-1)

(b)(1) [redacted]

b. (U) Previous Change Explanations --

(CH-1) Program experienced a 3 month slip due to administrative delays in reaching a MS II DAB.

c. (U) Current Change Explanations --

(CH-1) A two month schedule delay adjustment based upon Preliminary Design Review (PDR) being held in January 1993. PDR was delayed two months due to administrative delays.
(CH-2) Schedule acceleration (start dates from Dec 95 to Oct 95) and complete dates 1 month delay (from Jul 96 to Aug 96) based upon E&MD contract award 26 June 1992

(b)(1) [redacted]

(CH-4) A four month schedule delay adjustment (from Dec 94 to Apr

9c. (U) Schedule (Cont'd):
95) due to a combination of the two month delay based on the PDR adjustment, and an additional two month delay due to the ADA software requirement being incorporated into E&MD contract.

d. (U) References --

(U) Development Estimate:
Defense Acquisition Board (DAB), 5 June 89 and Deputy Secretary of Defense Acquisition Decision Memorandum (ADM), 29 June 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 23 June 1992.

10. (U) Performance Characteristics:

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(b)(1)

d. (U) References --

(U) Development Estimate:
Defense Acquistion Board (DAB), 5 June 89 and Deputy Secretary of Defense Acquisition Decision Memorandum (ADM), 29 June 89.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 23 June 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	328.3	328.3	339.7
Procurement	1535.7	1535.7	1543.0
Recurring	(1320.2)		(1327.8)
Non-Recurring	(79.6)		(79.1)
Total Flyaway	(1399.8)		(1406.9)
Fleet Support	(92.4)		(92.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.5)		(43.7)
Construction (MILCON)	21.8	21.8	21.8
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 90 Base-Year $	1885.8	1885.8	1904.5

11a. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
Escalation	1083.4	1083.4	803.9
Development (RDT&E)	(44.5)	(44.5)	(40.8)
Procurement	(1032.1)	(1032.1)	(756.3)
Construction (MILCON)	(6.8)	(6.8)	(6.8)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2969.2	2969.2	2708.4

b. (U) Quantity —

Development (RDT&E)	0	0	0
Procurement	8800	8800	8800
Total	8800	8800	8800

Excludes 108 RDT&E units which are not considered fully configured. Six additional units were added (since June 92) for airworthiness testing.

c. (U) Foreign Military Sales/International Cooperative Programs — None.

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Development Estimate:
Defense Acquisition Board (DAB), 5 June 89 and Deputy Secretary of Defense Acquisition Decision Memorandum (ADM), 29 June 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 23 June 1992.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	2708.4	2969.2	2708.4
(2) Quantity	8800	8800	8800
(3) Unit Cost	0.308	0.337	0.308

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	372.8	2567.8	28.6	2969.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-7.0	-330.5	-	-337.5
Quantity	-	-	-	-
Schedule	-	+40.2	-	+40.2
Engineering	-	-	-	-
Estimating	+14.7	+19.8	-	+34.5
Other	-	-	-	-
Support	-	+2.0	-	+2.0
Subtotal	+7.7	-268.5	-	-260.8
Total Changes	+7.7	-268.5	-	-260.8
Current Estimate	380.5	2299.3	28.6	2708.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	328.3	1535.7	21.8	1885.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.4	+7.1	-	+18.5
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	+11.4	+7.3	-	+18.7
Total Changes	+11.4	+7.3	-	+18.7
Current Estimate	339.7	1543.0	21.8	1904.5

Adjustments reflect the addition of MILCON and Procurement costs at MS-II.

b. (U) Previous Change Explanations --

RDT&E

Economic: adjustment of escalation indices.

Schedule: Extension of 18 to 25 months DEMVAL; systems engineering and program management required as a result of the extended program schedule.

Estimating: Additional A/C integration requirements; risk reduction in E&MD; DAB decision on prototyping in DEMVAL; test assets requirement increased from 65 to 102 units.

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Change to reflect revised escalation indices. (Economic)	N/A	-7.0
Engineering support efforts rephased due to budgetary reductions in early stage of program (Estimating)	+11.4	+14.7
RDT&E Subtotal	+11.4	+7.7
(2) Procurement		
Change to reflect revised escalation indices. (Economic)	N/A	-330.5
Refinement of prior estimate (Estimating)	+7.1	+19.8
Delivery schedule slip (Schedule)	N/A	+40.2
Attributable to hardware delivery schedule (Support)	+0.2	+2.0
Procurement Subtotal	+7.3	-268.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.337	-0.038	—	0.005	—	0.004	—	—	-0.029	0.308

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E —

(U) JSOW E&MD:	Initial Contract Price Target	Ceiling	Qty
TEXAS INSTRUMENTS, Dallas, TX N00019-91-C-0196, CPIF Award: June 26, 1992 Definitized: June 26, 1992	$202.5	$215.4	0

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$202.5	$215.4	0	$202.5	$205.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (03/31/93)	$0.6	$-1.8
Net Change	$0.6	$-1.8

Explanation of Change:

Early phase of the E&MD contract experienced delays in fulfilling manpower loading requirements.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status —

(1) Percent Program Completed: 24.1% (7 yrs/29 yrs)

(2) Percent Program Cost Appropriated: 6.0% ($163.0 / $2708.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY87-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2015)	Total
RDT&E	163.0	75.5	70.2	71.8	380.5
Procurement	-	-	-	2299.3	2299.3
MILCON	-	-	-	28.6	28.6
O&M	-	-	-	-	-
Total	163.0	75.5	70.2	2399.7	2708.4

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1987				1.1	1.0	1.0	1.0	2.7
1988				18.4	17.4	17.4	17.4	3.0
1989				15.4	15.1	15.1	15.1	4.2
1990				8.4	8.6	8.6	8.6	4.0
1991				15.5	16.4	16.4	15.6	4.3
1992				42.1	45.8	45.8	34.1	2.8
1993				52.7	58.7	52.0	1.9	2.4
1994				66.2	75.5			2.4
1995				60.2	70.2			2.3
1996				34.9	41.6			2.3
1997				24.8	30.2			2.2
Subtot				339.7	380.5	156.3	93.7	

Total program then-year dollars reflect JSOW (AIWS) baseline weapon only -- excludes P3I weapon.

Appropriation: 1507 Weapons Procurement, Navy								
1996		21.0		21.0	25.7			2.3
1997	300	6.4	87.5	102.7	128.2			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
1998	387	5.7	87.2	103.4	131.9			2.2
1999	500	3.4	93.3	105.2	137.1			2.2
2000	500	3.2	87.3	98.7	131.5			2.2
2001	500	3.1	79.7	90.0	122.5			2.2
2002	500	3.0	76.8	86.8	120.8			2.2
2003	500	2.9	74.5	84.4	120.0			2.2
2004	500	2.9	72.5	82.4	119.7			2.2
2005	500	2.8	70.9	80.6	119.7			2.2
2006	500	2.8	69.4	79.0	120.0			2.2
2007	500	2.8	68.1	77.7	120.5			2.2
2008	500	2.8	66.9	76.4	121.2			2.2
2009	500	2.7	65.9	75.3	122.0			2.2
2010	500	2.7	64.9	74.3	123.0			2.2
2011	500	2.7	64.0	73.3	124.1			2.2
2012	500	2.7	63.2	72.5	125.4			2.2
2013	500	2.6	62.4	71.7	126.7			2.2
2014	500	2.5	59.1	68.1	123.1			2.2
2015	113	0.6	14.0	19.5	36.2			2.2

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1507 Weapons Procurement, Navy (Cont'd)								
Subtot	8800	79.3	1327.6	1543.0	2299.3			
1996				12.4	16.1			2.3
1997				5.5	7.3			2.2
1998				3.9	5.2			2.2
Subtot				21.8	28.6			
Grand Total	8800	79.3	1327.6	1904.5	2708.4	156.3	93.7	

Total program then-year dollars reflect JSOW (AIWS) baseline weapon only -- excludes P3I weapon.

Appropriation: 1205 Military Construction, Navy

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

Full rate decision has not been made, Pre Milestone III program.

17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		2299.3		N/A	N/A

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

SOURCE: Life Cycle Cost Estimate; 25 March 92
ASSUMPTIONS:
There is no antecedent system.
No additional operational/maintenance personnel at O-Level.
80 JSOW expenditures per year.
Deployed aboard 8 CVBG each year - 600 JSOW per CV.
60 month Serviceable-In-Service-Time (SIST) interval.
20 year life cycle thru FY 39.

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per JSOW Unit	Avg Annual Cost Per ANTECEDENT
Mission Personnel	0.0	N/A
Unit Consumption	0.3	N/A
Depot-AUR Maintenance	0.2	N/A
Depot-COMP RPR	0.1	N/A
Sustaining Support	0.3	N/A
Total	0.9	N/A

c. (U) Contractor Support Costs -- None.

N-24 MCM 1

92-131

OK

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MCM 1

AS OF DATE: December 31, 1992

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1. Designation and Nomenclature (Preferred Name):
MCM 1 (AVENGER CLASS) MINE COUNTERMEASURES SHIP

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
MINE WARFARE SHIP PROG OFF (PMS303)
NAVAL SEA SYSTEMS COMMAND
2531 JEFFERSON DAVIS HWY
ARLINGTON, VA 22242-5160

SES JAMES D. COLLIE
Assigned: December 20, 1991
AV 332-6481, 6482
COMM 703-602-6481,6482

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603564N (Shared)
PROCUREMENT:
APPN 1611 ICN 32401500 (Navy)

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs:
AN/SQQ-32 Advanced Minehunting Sonar (MCMs 1 and 10-14), AN/SQQ-30 Minehunting Sonar (MCMs 2-9), AN/SLQ-48 Mine Neutralization System, and AN/SSN-2 Precise Integrated Navigation System

6. Mission and Description:
The MCM Ship Acquisition Program provides the Navy with a new state of the art technology mine countermeasures ship class replacing the aging MSO 422/508 class ocean minesweeper fleet. The MCM is a 224 foot long wooden hull ship with a 1320 ton full load (departure)

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Office of the Chief of Naval Operations
Dept. of the Navy

93 669

6. Mission and Description (Cont'd):

displacement. It utilizes low magnetic signature equipment, diesel propulsion, two controllable reversible pitch propellers, and a bow thruster. The ship is equipped with the AN/SQQ-30 Sonar (hulls 2-9) or AN/SQQ-32 Advanced Minehunting Sonar for hulls 1 and 10-14), AN/SLQ-48 Mine Neutralization System, AN/SSN-2 Precise Integrated Navigation System, AN/SLQ-38 Mechanical Sweep System, AN/SLQ-37 Accoustic and Magnetic Sweep System, and the AN/WQN-1 Channel Finder Navigation System.

7. Program Highlights:

a. Significant Historical Developments —

In June 1979, several alternative program approaches were evaluated in replacing the aging MSO 422/508 ocean minesweeper fleet. The CNO approved the basic MSO 523 ship design as a candidate for the new MCM ship and directed that variations of the MSO 523 design be investigated. In consideration of operational and mission requirements, the most appropriate alternative was selected in countering the deep ocean mine threat. This "trade off" analysis, completed during March 1980, was accomplished in lieu of a preliminary design effort. During the latter portion of the contract design effort, two Ship System Design Support (SSDS) contractors, one designated primary, the other secondary, were selected to participate in the ship design effort. The primary SSDS contractor, Peterson Builders, Inc. of Sturgeon Bay, WI, was awarded the contract for detail design and construction of the leadship (MCM 1 AVENGER). The MCM contract design was completed in February 1982 and award of the MCM 1 leadship was made in June 1982. Marinette Marine Corp. of Marinette, WI was selected as the follow yard and awarded MCM 2 in May 1983. The program entails the construction and delivery of fourteen MCMs. MCMs 1 through 10 have been delivered. MCMs 11 and 12 are scheduled to deliver in June and August 1993 respectively.

b. Significant Developments Since Last Report —

(1) MCMs 9 and 10 were delivered during August and December 1992 respectively. (2) As a result of defects in the manufacturing process for hardening crank shaft bearing surfaces for the Isotta Praschini (IF) engines, numerous catastrophic engine failures were encountered earlier in the program. The manufacturer, FDGM of Italy, has replaced crank shafts for all I.F. equipped engines and provided other ancillary modifications. This problem has been resolved. (3) Successful testing of the Alternating Current (AC) minesweep generators (MSGs) has been accomplished. MCMs 9-14 use AC MSGs while MCMs 1-8 use Direct Current MSGs.

The MCM will satisfy mission requirements.

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date — None.

8. Threshold Breaches:
Based on latest MCM inclining experiment, updates to the 31 December 1989 acquisition program baseline (Performance category) were made for the characteristics titled "Draft" and "Displacement." A Program Acquisition Baseline Change Request and Deviation Report is being processed for Navy Acquisition Executive approval. These revisions present no adverse cost, schedule, or performance impact to the program and represent administrative corrections to preliminary baseline data. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones —

	Production Estimate	Approved Program	Current Estimate
Milestone I	APR 79	APR 79	APR 79
CEB Approval of Tradeoff Analysis	MAR 80	MAR 80	MAR 80
Milstone II	AUG 81	AUG 81	AUG 81
Leadership Award	JUN 82	JUN 82	JUN 82
Followyard Leadship Award	MAY 83	MAY 83	MAY 83
Milestone III	JUL 83	JUL 83	JUL 83
Leadship Delivery	AUG 87	AUG 87	AUG 87
Followyard Leadship Dlv	NOV 89	NOV 89	SEP 89

(1) CEB approved mission definition/commence tradeoff study in lieu of preliminary design.
(2) ASN (S&L) — production decision memo.
(3) SECNAV authorization for followship production.

b. Previous Change Explanations —

Follow yard leadship delivered two months early.

c. Current Change Explanations — None.

d. References —

Production Estimate:
FY 1991 President's Budget

Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1989.

10. Performance Characteristics:

a. Performance —

	RDE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Operating Crew	74	74	/ 74	84	84	(CH-1)
Beam (ft)	39	39	/ 39	39	39	
Draft (ft)	11.5	11.5	/ 11.5	12.2	12.2	(CH-1)
Length (ft)	224	224	/ 224	224	224	
Displace (tons)	1312	1312	/ 1312	1320	1320	(CH-1)
Speed (knots)	13.5	13.5	/ 13.5	13.5	13.5	
Endur (N.M. @10kts)	2500	2500	/ 2500	2500	2500	

b. Previous Change Explanations — None.

c. Current Change Explanations —

(CH-1) The "Operating Crew" characteristic reflects the latest (FY92) version of the Ship's Manpower Document (SMD). The previous objective based on the preliminary SMD was 74. The current estimate is 84. A Program Deviation Report will be forwarded for Navy Acquisition Executive review. This characteristic more appropriately defines "Accommodations" which indicates total vessel berthing. This change represents an administrative correction and poses no adverse cost, schedule, or performance impact to the program.

(CH-1) The "Draft" and "Displacement" characteristics have been updated based on latest MCM inclining experiment. A Program Deviation Report will be forwarded for Navy Acquisition Executive review. "Draft" and "Displacement" respectively reflect the Navigational Departure Draft in feet and Full Load Departure Displacement in tons. The former estimate for draft was 11.5 feet; current estimate per change 1 is 12.2 feet. The former estimate for full load displacement was 1312 tons; current is 1320 tons. These changes represent administrative corrections to original baseline data and do not present any adverse cost, schedule, or performance based impact to the MCM program.

d. References —

Production Estimate:
FY 1991 President's Budget

Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1989.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost —			
Development (RDT&E)	21.2	21.2	21.2
Procurement	1445.1	1445.1	1499.1
Basic Ship Cost	(838.3)		(908.7)
Government Furn. Equipment	(490.2)		(489.0)
Other Sailaway	(29.3)		(37.1)
Outfit/Post Delivery	(87.3)		(64.3)
Total Sailaway	(1445.1)		(1499.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 82 Base-Year $	1466.3	1466.3	1520.3
Escalation	271.1	271.1	248.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(271.1)	(271.1)	(248.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1737.4	1737.4	1768.7
b. Quantity —			
Development (RDT&E)	0	0	0
Procurement	14	14	14
Total	14	14	14

c. Foreign Military Sales/International Cooperative Programs — NONE

d. Nuclear Costs — NONE

e. References —

Production Estimate:
FY 1991 President's Budget

Approved Program:
DAE Approved Acquisition Program Baseline dated 31 December 1989.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1768.7	1788.0	1768.7
(2) Quantity	14	14	14
(3) Unit Cost	126.34	127.71	126.34
b. Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	16.0	16.0	3.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	16.0	16.0	3.7
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	21.2	1716.2	0.0	1737.4
Previous Changes:				
Economic	-	-4.9	-	-4.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+68.6	-	+68.6
Other	-	-	-	-
Support	-	-13.1	-	-13.1
Subtotal	-	+50.6	-	+50.6
Current Changes:				
Economic	-	-21.3	-	-21.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-11.1	-	-11.1
Other	-	-	-	-
Support	-	+13.1	-	+13.1
Subtotal	-	-19.3	-	-19.3
Total Changes	-	+31.3	-	+31.3
Current Estimate	21.2	1747.5	-	1768.7

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	21.2	1445.1	0.0	1466.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+70.0	-	+70.0
Other	-	-	-	-
Support	-	-10.2	-	-10.2
Subtotal	-	+59.8	-	+59.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-16.0	-	-16.0
Other	-	-	-	-
Support	-	+10.2	-	+10.2
Subtotal	-	-5.8	-	-5.8
Total Changes	-	+54.0	-	+54.0
Current Estimate	21.2	1499.1	-	1520.3

ECONOMIC (Then Year) Current Change: The $-21.3M Current Change for Economic incorporates a $-15.0M correction for the December 1991 SAR submit. The "Current Changes" for the Economic category in the December 91 SAR indicated $-2.2M. The correct value should have been $-17.2M. The formerly reported $-2.2M has migrated to the Previous Changes (Economic). Current Economic change value shown for this SAR incorporates the $-15.0M correction and combines with it this SAR's calculated current economic change of $-6.3M (total $-21.3M).

ESTIMATING (Then Year) Current Change: The "Current Change" amount for the December 1991 SAR "Estimating" category reported a $-10.3M decrease. The correct value should have been $+4.7M resulting from the offset of the noted $-15.0M Economic category correction. The net current $-11.1M Estimating category decrease is based on the following: Correction of Economic from the December 1991 SAR,

13a. Cost Variance Analysis (Cont'd):
planning yard services plus other minor program estimating increases, and reduction in outfitting and post delivery (OF/PD) estimates. An adjustment is also included which results from reclassification (offset) of "previous change" OF/PD costs from the "Support" category to "Estimating."

b. Previous Change Explanations —

Procurement

Economic:	Net cumulative effect of revised OSD inflation indices.
Estimating:	Net changes associated with increase for MCM 9-14 basic construction contract awards; increase required to cover Marinette Marine Corp. contract settlement; and reduction in GFE and Program Manager's Growth estimates.
Support:	Reestimate of MCM outfitting and post delivery account requirements. NOTE: Outfitting and post delivery will no longer be classified as "Support" category changes. Future revisions will be provided as "Estimating" changes.

c. Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised March 93 Inflation Indices. (Economic)		-21.3
(Then Yr) Increase in Planning Yard Services and current and prior economic adjustment (Estimating)	+7.2	+22.4
(Then Yr) Decrease in estimated outfitting and post delivery requirements. (Estimating)	-13.0	-20.4
(Then Yr) Reclassification of OF/PD costs from Support to Estimating (Estimating)	-10.2	-13.1
(Then Yr) Reclass OF/PD costs from Support to Estimating (+13.1). (Support)	+10.2	+13.1
Procurement Subtotal	-5.8	-19.3

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
124.100	-1.871	—	—	—	4.107	—	—	2.236	126.336

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement —

MCM 12-14 CONSTRUCTION:	Initial Contract Price		
	Target	Ceiling	Qty
PETERSON BUILDERS, INC., STURGEON BAY, WI N00024-89-C-2126, FFP OPT Award: December 12, 1989 Definitized: December 12, 1989	$180.5	N/A	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$181.6	N/A	3	$181.6	$181.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$3.6	$-7.0
Cumulative Variances To Date (02/28/93)	$7.7	$-4.3
Net Change	$4.1	$2.7

Explanation of Change:

All cost data reported in contract base year dollars. The MCM 12-14 is an option to the basic MCM 9-11 contract. MCMs 12-14 are the last ships planned for the program. Combined MCM 12-14 cost performance has continued to improve from the previous SAR submission. The prior favorable cumulative to date cost variance of $+3.6M improved to $+7.6M. Combined cumulative to date (CTD) total contract cost efficiency has improved to 105.9% (5.9% favorable with assessed contract value earned to date of $136.7M at an incurred cost of $129.1M). Both the PM and the contractor estimate a final 6 to 8% profit will be made on this FFP contract. Schedule efficiency has posed the greater challenge for this contract. The contractor is currently $4.4M behind in their budgeted schedule with $136.7M of value earned to date versus $141.1M planned to have been earned. Most of the schedule variance is being experienced on MCM 12 and 13 with MCM 13 currently posing the greater amount of schedule risk to its planned December 93 delivery. The contractor continues to assert

15. Contract Information (Cont'd):
that all ships will make their current contract deliveries. The PM concurs that the MCM 12 can, with continued strong monthly progress gains, make its August 93 delivery. However a 4 to 6 week schedule slide is currently being considered for MCM 13. No breaches are involved.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status —

(1) Percent Program Completed: 88.2% (15 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 99.8% ($1764.6 / $1768.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY79-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete	Total
RDT&E	21.2	-	-	-	21.2
Procurement	1743.4	3.7	0.4	-	1747.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1764.6	3.7	0.4	-	1768.7

c. Annual Summary —

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1979				2.6	2.3	2.3	2.3	8.4
1980				3.7	3.3	3.3	3.3	10.6
1981				4.6	4.5	4.5	4.5	10.6

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1982				3.1	3.2	3.2	3.2	7.6
1983				4.6	4.9	4.9	4.9	4.9
1984				1.0	1.1	1.1	1.1	3.8
1985				0.8	0.9	0.9	0.9	3.4
1986				0.3	0.4	0.4	0.4	2.8
1987				0.5	0.6	0.6	0.6	2.7
Subtot				21.2	21.2	21.2	21.2	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1982	1		168.1	119.7	130.4	110.6	108.4	7.5
1983	1		148.2	120.2	132.9	130.3	127.4	3.8
1984	3		315.0	342.3	385.5	372.5	352.3	3.6
1985	4		371.5	348.2	399.3	380.8	352.0	2.1
1986	2		214.5	249.9	292.5	276.1	251.3	1.1
1987				9.6	11.4	11.2	10.9	1.5
1988				2.5	3.1	3.1	3.0	2.3
1989				5.0	6.3	6.2	5.8	2.8
1990	3		281.8	273.2	348.0	311.4	227.4	1.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1991				5.8	7.5	7.3	6.7	1.3
1992				7.9	10.5	8.7	7.2	1.7
1993				11.8	16.0	1.7	0.3	2.4
1994				2.7	3.7			2.4
1995				0.3	0.4			2.3
Subtot	14		1499.1	1499.1	1747.5	1619.9	1452.7	
Grand Total	14		1499.1	1520.3	1768.7	1641.1	1473.9	

17. Production Rate Data:

a. Production Baseline Rate

Production Baseline Rate data not required for programs that produce at a rate less than 6 items per year.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		3.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		0.0		N/A	N/A

c. Deliveries (Plan/Actual) —

	To Date
RDT&E	0/0
Procurement	10/10

d. Approved Design-to-Cost Objective — N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules —

O & S costs associated with the Mine Countermeasures (MCM) ship are based on a 35 year service life. Estimates are based on an "operating tempo" approach and include direct costs to support the primary personnel to operate the ships (currently authorized force level of 14 ships), Operations (including fuel, repair parts, supplies, training, and purchased services), Intermediate and Depot level maintenance, and Indirect Costs including training, publications, Eng/Tech services, retirement, and PCS transfer costs.

18b. Operating and Support Costs (Cont'd):

b. Costs — (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Ship	Avg Annual Cost Per Ship
DIRECT PERSONNEL	2.0	N/A
UNIT OPERATIONS	0.6	N/A
FUEL	0.1	N/A
DIRECT MAINTENANCE	1.0	N/A
INDIRECT COSTS	0.1	N/A
Total	3.8	N/A

c. Contractor Support Costs — None.

N-25 MHC 51

92-132

OK

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MHC 51 CLASS

AS OF DATE: December 31, 1992

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1. **Designation and Nomenclature (Preferred Name):**
MHC 51 (OSPREY Class) Coastal Minehunter Ship

2. **DoD Component:** Navy

3. **Responsible Office and Telephone Number:**

MINE WARFARE SHIP PROG OFF (PMS303)	SES JAMES D. COLLIE
NAVAL SEA SYSTEMS COMMAND	Assigned: December 20, 1991
2531 JEFFERSON DAVIS HWY	AV 332-6481,6482
ARLINGTON, VA 22242-5160	COMM 703-602-6481,6482

CLEARED
FOR OPEN PUBLICATION

MAY 26 1993 9

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604567N (Shared)
PROCUREMENT:
APPN 1611 ICN 32401500 (Navy)

5. **Related Programs:**
AN/SQQ-32 Advanced Minehunting Sonar, AN/SLQ-48 Mine Neutralization System, and AN/SYQ-13 Navigation Command and Control System.

6. **Mission and Description:**
The MHC 51 Coastal Minehunter Ship class will provide the Navy with an enhanced surface minehunting, minesweeping, and mine neutralization capability into the 21st century. The MHC is a 57.2 meter long glass reinforced plastic (GRP) hull ship which will utilize low magnetic signature equipment, diesel engines and

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93-C-0428
MAY 26 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

6. Mission and Description (Cont'd):

cycloidal propulsion. Major payload equipments include the AN/SYQ-13 Navigation, Command, and Control System, the AN/SQQ 32 Advanced Minehunting Sonar, and, as modularly deployed, either an AN/SLQ-48 Mine Neutralization System or a mechanical minesweeping system (space and weight reserved). The MHC ship will serve as the "low-mix" complement to the ocean going Mine Countermeasures (MCM) ship and will enable battle group and amphibious operations in, harbors, coastal waters, and littoral areas worldwide in clearing acoustic, magnetic, and pressure/contact type mines from the bottom and surrounding water volume. The MHC may operate in coordination with both Airborne Mine Countermeasures (AMCM) helicopters and MCM ships.

7. Program Highlights:

a. Significant Historical Developments —
In May 1982, an Operational Requirement (OR) was issued for a "low mix" minehunter complement to the larger ocean going MCM ship. This effort culminated in the MSH-1 class design. MSH was terminated in November 1986 due to lack of shipbuilder ability to make sufficient progress and problems with the overall design development. The MHC program was initiated in 1986 to replace the MSH. The MHC ship is based on the LERICI Class Minesweepers designed and built by Intermarine S.p.A. (IMSpA), an Italian shipbuilder. IMSpA was awarded a design contract to modify the LERICI design to meet U.S. Navy operational requirements. Milestone I (Authorization for Contract Design) was approved in June 1986. The MHC Acquisition Program Endorsement Memo (PEM) for Milestone II (leadship production authorization) was issued by the Ass't Secretary of the Navy (Shipbuilding and Logistics) on 11 December 1986. This PEM granted approval to proceed with steps necessary for the sole source award of the leadship MHC contract to Intermarine USA (IMUSA) with requirements to competitively select a second source shipbuilder. The leadship (MHC 51) contract was awarded to IMUSA on 22 May 1987. IMUSA started hull construction (layup of the GRP laminate) in May 1988. Milestone IIIA (authorization for limited production) was approved in February 1989. The follow builder, Avondale Industries, Inc. (GRP Division) (AII/GRP), was awarded the MHC 53 contract on 3 Oct 1989. Milestone IIIB (full rate production) approval was authorized in January 1990. The current MHC program force level procurement authorization is for 12 ships. All ships are currently under contract.

b. Significant Developments Since Last Report —
On 22 April 1992, a competitive FPI contract was awarded to Intermarine USA of Savannah, GA for the remaining 5 ships of the planned 12 ship procurement program (programmed procurements for FYs 1992 and 1993). The basic contract was for the acquisition of 3 FY 1992 appropriated ships with a priced option for the remaining 2 FY

7b. Program Highlights (Cont'd):

1993 appropriated ships. The option for the final two ships of class (MHCs 61 and 62) was exercised on 31 March 1993.

c. Changes Since As Of Date —
The priced option for the procurement of the final 2 MHC ships planned for the program was exercised to Intermarine USA on 31 March 1993. A decision has been made to grant Avondale's request to move the MHC 53 (Avondale's GRP Division leadship) from the GRP Division yard in Gulfport, MS to the Avondale Industries main yard in New Orleans. Avondale states this will facilitate a more efficient and expeditious completion of the MHC 53 outfitting and testing effort. Recent internal review raised concern with the cradles supporting the engines in the engine and auxiliary machinery rooms. This concern came after evaluation of pre-shock trial inspection team surveys which found the cradles were supporting more weight than originally designed for shock. This issue is resolvable and manageable. Implementation of the solution, if necessary, will vary by ship depending on the stage of construction. MHC 51 (leadship) changes, if necessary, will be made during the ship's Post Shakedown Availability with ship shock trials to follow.

8. Threshold Breaches:
A request has been submitted to the NAE to change the Performance baseline threshold for MHC Draft from 2.8m to 3.68m. While technically a breach, the 2.8m original baseline value was an erroneous entry. This is a corrective action with no unfavorable performance, cost, or schedule impact resulting. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones —

	Production Estimate	Approved Program	Current Estimate
Milestone I 1/	JUN 86	JUN 86	JUN 86
Milestone II 2/	DEC 86	DEC 86	DEC 86
MHC 51 (Leadship) Award	MAY 87	MAY 87	MAY 87
Milestone IIIA 3/	FEB 89	FEB 89	FEB 89
MHC53, 1st ship to 2nd yard	OCT 89	OCT 89	OCT 89
Milestone IIIB 4/	JAN 90	JAN 90	JAN 90
Launch MHC 51 Leadship	MAR 91	MAR 91	MAR 91
MHC 51 Acceptance Trial	NOV 92	NOV 92	MAY 93(Ch-1)
MHC 51 Delivery	DEC 92	DEC 92	JUN 93(Ch-1)
MHC 53 Delivery	MAR 94	MAR 94	SEP 94(Ch-1)

1/ ASN(S&L) contract design authorization. 2/ ASN(S&L) Program Endorsement Memo authorizing lead ship production. 3/ ASN(S&L)

9a. Schedule (Cont'd):
authorization for award of FY 89 ships. 4/ ASN(S&L) authorization for award of FY 90 ships and out.

b. Previous Change Explanations — None.

c. Current Change Explanations —

(CH-1) MHC 51 Acceptance Trials and Delivery: Since the December 1991 SAR submit, the MHC 51 (program leadship) contract delivery date has been revised to May 1993. Based on continued lag in testing and IIS progress with this program leadship, the Program Manager revised the MHC 51 delivery to late April 1993. Further testing, logistics, and INSURV scheduling problems caused added delay with the PM, in early April, estimating a 5/26/93 delivery. Additional problems experienced during Builder's Trials combined with review of shock capability for sea chest welds and engine cradles caused further estimated delay to end of June 1993 delivery estimate. Current change summary: A.T. from November 1992 to May 1993; Delivery from December 1992 to June 1993.

(CH-1) MHC 53 Delivery: The leadship for the follow construction yard (Avondale GRP Division) has also experienced significant production delays. The PM has conducted an analysis of monthly progress gains made to date versus a projection of progress which is reasonably expected to be made. The results of this analysis indicate a 6 month delivery delay may be experienced. The noted revised MHC 53 delivery estimate closely approaches the current MHC 53 delivery schedule threshold. The PM will continue to monitor progress over the next few months to determine if a delivery slip beyond the threshold is likely. Current change summary: Delivery from March 1994 to September 1994.

d. References —

Production Estimate:
NAE approved Acquisition Program Baseline dated 11 March 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated 11 March 1992.

10. Performance Characteristics:

a. Performance —

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Operating Crew (Auth)	51	51	/ 51		51	
Beam (meters)	11.0	11.0	/ 11.0	11.0	11.0	
Draft (Nav) (meters)	2.8	2.8	/ 2.8	3.68	3.68	(CH-1)
Length (meters)	57.2	57.2	/ 57.2	57.2	57.2	
Full Load Disp (metric tons)	918	918	/ 964	914	914	(CH-1)
Speed (knots)	10.0	10.0	/ 10.0		10.0	
Endurance (NM @ 10 kts)(@ 80% power)	1500.0	1500.0	/ 1500.0		1500	
Diesels (cyl)	2/8	2/8	/ 2/8	2/8	2/8	
Shafts	2	2	/ 2	2	2	
Horsepower @ (RPM)	1600 @ 1800	1600 @ 1800	/ 1600 @ 1800	1600 @ 1800	1600 @ 1800	

"Draft (Nav)" represents Navigational Departure Draft.

b. Previous Change Explanations — None.

c. Current Change Explanations —

(CH-1) The threshold stated for "Draft" (2.8m) has been requested to be corrected through a Program Deviation Request (PDR) submitted to the Navy Acquisition Executive. Both the original baseline objective and threshold for MHC Draft were erroneous. This change has no adverse cost, schedule, or performance impact to the program. The change is an administrative correction. Current change summary: Current estimate for draft from 2.8 meters to 3.68 meters.

(CH-1) Refinement of full load displacment (metric tons) from prior estimate of 918 to current 914 is based on recent inclining experiment.

d. References —

Production Estimate:
NAE approved Acquisition Program Baseline dated 11 March 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated 11 March 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost —			
Development (RDT&E)	17.2	17.2	17.2
Procurement	1440.2	1440.2	1430.0
Basic	(966.4)		(932.6)
Government Furnished Equipment	(346.9)		(360.5)
Other	(31.9)		(46.4)
Outfitting/Post Delivery	(80.1)		(75.6)
Total Sailaway	(1425.3)		(1415.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(14.9)		(14.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 92 Base-Year $	1457.4	1457.4	1447.2
Escalation	90.9	90.9	60.1
Development (RDT&E)	(-2.2)	(-2.2)	(-2.2)
Procurement	(93.1)	(93.1)	(62.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1548.3	1548.3	1507.3
b. Quantity —			
Development (RDT&E)	0	N/A	0
Procurement	12	12	12
Total	12	12	12

c. Foreign Military Sales/International Cooperative Programs — None.

d. Nuclear Costs — N/A

e. References —

Production Estimate:
NAE Approved Acquisition Program Baseline dated 11 March 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated 11 March 1992.

12. **Program Acquisition/Current Procurement Unit Cost Summary:**

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1507.3	1548.3	1507.3
(2) Quantity	12	12	12
(3) Unit Cost	125.61	129.03	125.61
b. Current Procurement —	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	253.5	253.5	28.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	253.5	253.5	28.7
(2) Quantity	2	2	0
(3) Unit Cost	126.75	126.75	N/A

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	15.0	1533.3	0.0	1548.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-19.6	-	-19.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-21.4	-	-21.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-41.0	-	-41.0
Total Changes	-	-41.0	-	-41.0
Current Estimate	15.0	1492.3	-	1507.3

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	17.2	1440.2	0.0	1457.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-10.2	-	-10.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-10.2	-	-10.2
Total Changes	-	-10.2	-	-10.2
Current Estimate	17.2	1430.0	-	1447.2

b. Previous Change Explanations --

Procurement
Economic: None
Quantity: None
Schedule: None
Engineering: None
Estimating: None
Other: None
Support: None

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised March 1993 inflation indices. (Economic)		-19.6
FY 92 program contract award savings and reduction of funding to ceiling for FY 93 program ships. (Estimating)	-29.2	-31.6
Reduction in estimated Outfitting and Post Delivery requirements. (Estimating)	-4.5	-10.2
Current and prior economic offset/adjustment. (Estimating)	+23.5	+20.4
Procurement Subtotal	-10.2	-41.0

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
129.025	-1.633	-0.001	--	--	-1.783	--	--	-3.417	125.608

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

MHC 51 (LEADSHIP):
INTERMARINE U.S.A., SAVANNAH, GA
N00024-87-C-2136, FPI
Award: May 22, 1987
Definitized: February 14, 1989

Initial Contract Price		
Target	Ceiling	Qty
$80.3	$116.4	1

Current Contract Price		
Target	Ceiling	Qty
$84.9	$122.4	1

Estimated Price At Completion	
Contractor	Program Manager
$122.4	$122.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-97.2	$-4.7
Cumulative Variances To Date (02/28/93)	$-117.8	$-2.1
Net Change	$-20.6	$2.6

15. Contract Information (Cont'd):

Explanation of Change:

($ In Millions) MHC 51 contract is forward priced — dollars in then year. Total cost estimate at completion: Contractor, $205.2M; Program Manger, $207.0M. The current estimate of government liability remains at the current contract ceiling price. Cost deterioration has continued, however, based on the continuum of extensive technical and production problems associated with this new state of the art foreign technology leadship. Schedule performance has continued to remain behind. At the time of this SAR preparation, the PM's best estimate of MHC 51 delivery is late June 1993. This is just within the 6 month MHC 51 program baseline delivery schedule threshold 30 June 1993.

MHC 52:
INTERMARINE U.S.A., SAVANNAH, GA
N00024-89-C-2152, FPI
Award: February 17, 1989
Definitized: February 17, 1989

Initial Contract Price		
Target	Ceiling	Qty
$55.3	$61.6	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$57.3	$63.9	1	$63.9	$63.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-12.0	$-4.6
Cumulative Variances To Date (02/28/93)	$-0.7	$-6.9
Net Change	$11.3	$-2.3

Explanation of Change:

($ in Millions) Values are expressed in contract base year dollars. The contractor's cost EAC is $75.9M with a PM EAC of $78.3M. Schedule performance deterioration is mainly driven by flow down of MHC 51 leadship production problems and difficulty in resolving them as they impact MHC 52 construction schedule. The growing negative schedule variance indicates the contractor's inability to recapture schedule. Much of this schedule deficit has been caused by MHC 52 resources being applied to get the MHC 51 delivered. The PM has considered this combination of production delay factors and has estimated a maximum 5 month delivery delay for MHC 52 revising the estimate from October 93 to March 94. The current estimate of government liability remains at ceiling price. The net change (reduction) in cost variance is due to a Cost Performance Report reprogramming authorization in March 1991.

15. Contract Information (Cont'd):

MHC 53:
AVONDALE INDUSTRIES, GULFPORT, MS
N00024-89-C-2162, FPI
Award: October 3, 1989
Definitized: October 3, 1989

Initial Contract Price		
Target	Ceiling	Qty
$62.4	$75.0	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$63.5	$76.3	1	$76.3	$76.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-18.3	$-7.1
Cumulative Variances To Date (02/28/93)	$-31.6	$-6.8
Net Change	$-13.3	$0.3

Explanation of Change:

($ in Millions) Values in contract base year dollars. MHC 53 is the leadship contract for the follow yard, Avondale Industries, GRP division. The contractor cost EAC is $94.0M; PM EAC is $102.0M. The current estimate of maximum government liability remains at the current ceiling price. The nature of many of the technical and production problems experienced on the lead ship at IMISA (MHC 51) have been realized on this contractor's first production ship. The contractor's negative cost variance has increased to $-31.6M. The majority of the cost variance is tied to overruns in indirect expense, engineering effort, and hull labor production. The contractor's performance continues to validate the PM's cost EAC of $102.0M. The contractor's schedule performance has also continued to worsen. Based on production progress returns over the past 12 months, the PM has revised the MHC 53 estimated delivery from March 94 to September 94. This estimate is not supported by the contractor or data reported on the contractor's cost performance report.

MHC 54:
AVONDALE INDUSTRIES, GULFPORT, MS
N00024-90-C-2304, FPI
Award: August 2, 1990
Definitized: August 2, 1990

Initial Contract Price		
Target	Ceiling	Qty
$63.6	$66.2	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$63.8	$66.4	1	$66.4	$66.4

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$1.1	$-5.3
Cumulative Variances To Date (02/28/93)	$1.2	$-5.9
Net Change	$0.1	$-0.6

Explanation of Change:

($ In Millions) Values in contract base year dollars. The MHC 54 is Avondale/GRP's second MHC production contract. The contractor reports a "to date" favorable cost variance of $ 1.2M. Despite this favorable variance, Avondale projects an at completion cost overrun of $3.9M. Most of the projected overrun is in overhead accounts. The PM believes that MHC 54 cost growth will continue based on the extent and complexity of MHC 53 production problems and the relative impact they present for the 54 (much as MHC 52 reacted to MHC 51 at IMUSA). The PM maintains that production inefficiency will persist as more complex downstream outfitting and testing efforts are performed--areas of effort which the PM does not expect to be adequately resolved from MHC 53 production experience. Despite improved progress gains over recent months, the PM revised the MHC 54 delivery estimate from October 94 to March 95. This delay is based on the contractor's continued inability to demonstrate consistently strong progress gains.

MHC 56/57 (OPTION):
AVONDALE INDUSTRIES, GULFPORT, MS
N00024-90-C-2304, FPI
Award: March 29, 1991
Definitized: March 29, 1991

Initial Contract Price		
Target	Ceiling	Qty
$111.0	$115.3	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$111.0	$115.3	2	$115.3	$115.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.3	$-0.2
Cumulative Variances To Date (02/28/93)	$0.6	$-4.7
Net Change	$0.9	$-4.5

Explanation of Change:

Dollars are in millions reported in contract base year values. The MHC 56/57 construction is an exercised option to the MHC 54 contract. Most of the MHC 56/57 progress is material based, i.e., ordering, billing, and receiving material for the ship--not significant levels of gainful construction progress on the vessels. Labor Production

15. Contract Information (Cont'd):
Progress (progress which excludes skewing effects of engineering and material ordering) is currently less than 8% on the combined hulls (MHC 56 at 6.5% and MHC 57 at less than 1%). With this considered, the contractor is reporting a cost EAC $10.0M above their current contract budget ($106.1M vs $96.1M). CPR performance calculations to date do not support these overrun projections, however, review of the contractor's manhour bid for MHCs 58-60 and their current CPR based manhour EAC indicate that the manhour budget is clearly understated. Avondale currently reports a projected 410K hour overrun to their manhour budget (743K hours budgeted to EAC of 1153K hours). This is a 55% overrun projection at a time when the above noted production progress is under 8%. Any further deterioration in the contractor's EAC should, at this stage, clearly signal that this contract will exceed ceiling. The lack of progress on these 2 vessels also supports the PM's recent decision to delay the respective delivery by 5 months for MHC 56 (early March 95 to end of July 95) and 4 months for the MHC 57 (early July 95 to end of October 95).

MHC 58, 59, & 60:	Initial Contract Price Target	Ceiling	Qty
INTERMARINE USA, SAVANNAH, GA N00024-92-C-2203, FPI Award: April 22, 1992 Definitized: N/A	$178.0	$199.6	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$178.0	$199.6	3	$178.0	$181.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (02/28/93)	$-3.4	$0.8
Net Change	$-3.4	$0.8

Explanation of Change:

With 16% of total contract progress accomplished to date (average of earned value to budget across 3 hulls), the contractor reports a negative to date cost variance of $-3.4M. Extrapolation of this performance renders the current Program Manager price EAC. The principal driver of the variance remains in the material account due to unfavorable negotiations with the contractor's Navigation Command and Control System vendor, Paramax. The contractor maintains his cost EAC at the current target of $166.3M. The contractor reports no EAC variances in their labor SWBS accounts and a total of $1.6M negative at completion cost in the material account which is covered by management reserve. Minimal production labor effort has been realized on either MHC 59 or 60.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status —

(1) Percent Program Completed: 66.7% (8 yrs/12 yrs)

(2) Percent Program Cost Appropriated: 96.1% ($1448.8 / $1507.3)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY86-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-97)	Total
RDT&E	15.0	-	-	-	15.0
Procurement	1433.8	28.7	18.3	11.5	1492.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1448.8	28.7	18.3	11.5	1507.3

c. Annual Summary —

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1986				1.8	1.5	1.5	1.5	2.8
1987				7.9	6.7	6.7	6.7	2.7
1988				4.3	3.8	3.8	3.8	3.0
1989				2.4	2.2	2.2	2.2	4.2
1990				0.8	0.8	0.8	0.8	4.0
Subtot				17.2	15.0	15.0	15.0	

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1986	1		198.8	190.0	179.9	153.7	126.7	1.1
1987				0.8	0.8	0.8	0.1	1.5
1988								2.3
1989	2		244.2	231.3	233.4	205.0	160.3	2.8
1990	2		236.4	238.7	245.8	208.9	124.8	1.3
1991	2		200.6	190.7	200.7	165.1	60.0	1.3
1992	3		308.2	297.0	319.7	241.4	36.3	1.7
1993	2		226.9	230.3	253.5	136.8	0.1	2.4
1994				25.5	28.7			2.4
1995				15.9	18.3			2.3
1996				8.2	9.6			2.3
1997				1.6	1.9			2.2
1998								2.2
Subtot	12		1415.1	1430.0	1492.3	1111.7	508.3	
Grand Total	12		1415.1	1447.2	1507.3	1126.7	523.3	

FY 1990 "Flyaway" column excludes $14.9M FY 92 base year of SQQ 32 Sonar and SLQ 48 MNS battle spares which are classed as "initial spares".

17. Production Rate Data:

a. Production Baseline Rate

Not required for programs that produce at a rate less than 6 items per year.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	28.7	0.0	-28.7	-28.7
Procurement Qty	N/A	0	N/A	N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	18.3	0.0	-18.3	-18.3
Procurement Qty	N/A	0	N/A	N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	0.0	11.5	0.0	-11.5	-11.5

c. Deliveries (Plan/Actual) —

	To Date
RDT&E	0/0
Procurement	1/0

The noted delivery is for MHC 51 which, per the original schedule baseline, was planned for December 1992.

d. Approved Design-to-Cost Objective — N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules —

O & S costs associated with the Coastal Minehunter (MHC) are based on a 35 year service life. Factors and associated O & S cost estimates are based on a new design ship class with first unit delivering in the May/June 1993 timeframe. Estimates are based on an "operating tempo" approach and include direct costs to support the primary personnel to operate the ships (currently authorized force level of 12 ships), Operations (including fuel, repair parts, supplies, training, and purchased services), Intermediate and Depot level main-

18a. Operating and Support Costs (Cont'd):
tenance, and Indirect Costs including training, publications, engineering and technical services, retirement, and PCS transfer costs.

b. Costs — (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Ship	Avg Annual Cost Per Ship
Direct Personnel	1.8	N/A
Unit Operations	0.6	N/A
Fuel	0.1	N/A
Direct Maintenance	0.7	N/A
Indirect Costs	0.1	N/A
Total	3.3	N/A

c. Contractor Support Costs — None.

OK w/ Redactions as noted below.

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: T-AGOS SURV SHIP

AS OF DATE: December 31, 1992

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1. **Designation and Nomenclature (Preferred Name):**
T-AGOS CLASS OCEAN SURVEILLANCE SHIP

2. **DoD Component:** Navy

3. **Responsible Office and Telephone Number:**
Naval Sea Systems Command (PMS383)
Zachary Taylor Building (NC#3)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

CAPT Theodore Doroshenk, USN
Assigned: August 2, 1991
AV 332-3507 COMM (703) 602-3507

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0603564N Project 0408 (Shared)
PE 0604567N Project 0857 (Shared), 1803 (Shared)
PROCUREMENT:
APPN 1611 ICN 5030 (Navy)

5. **Related Programs:**

Surveillance Towed Array Sensor System (SURTASS)

No Security Objection to Open Publication (AS AMENDED) MAY 25 1993 Office of the Chief of Naval Operations Dept. of the Navy

NSE Business sensitive

AS AMENDED FOR OPEN PUBLICATION

MAY 26 1993 22

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

OASD(PA) DFOISR 93-C-0415

6. **Mission and Description**:
MISSION: The T-AGOS will collect, process, and transmit acoustic data in support of the Navy Integrated Undersea Surveillance System (IUSS).

DESCRIPTION: The program consists of eighteen T-AGOS 1 Class (Monohull), four T-AGOS 19 Class, and three T-AGOS 23 Class (Small Waterplane Area Twin Hull - SWATH) ships. The T-AGOS 1 and 19 Classes serve as platforms for the SURTASS (SURveillance Towed Array Sensor System) and have accommodations for 30 (22 MSC crew and 8 technicians) and 34 (22 MSC crew and 12 technicians), respectively. The T-AGOS 23 Class serves as a platform for the SURTASS with a second acoustic system and has accommodations for 45 (26 MSC crew and 19 technicians). The T-AGOS are built to commercial standards and designed to support the SURTASS towed arrays and associated data processing/transmitting equipments.

7. **Program Highlights**:
a. Significant Historical Developments --
The T-AGOS 1 Class Program was established by Top Level Requirement OPNAVINST C9010.315 of 15 NOV 77. A production contract for the first twelve T-AGOS monohulls was awarded to Tacoma Boat Co. (TBC) on 15 SEP 80. When it became evident that TBC would be unable to complete construction of the twelve ships, Navy rescoped the TBC contract to ten ships on 27 SEP 85. The last of these monohulls (T-AGOS 10) was delivered on 20 JAN 87. The T-AGOS 11-12 were recompeted; a production contract was awarded to TBC on 18 SEP 87. T-AGOS 11 and 12 monohulls were delivered on 7 JUN 89 and 2 OCT 89, respectively.

A production contract for T-AGOS 13-18 was awarded to Halter Marine on 3 APR 85. Accommodations for these ships were for 33 personnel vice 30 as on prior ships. The last of these ships was delivered on 12 JAN 90.

Operational Requirement 106-095-85 dated 23 JUN 86 and Top Level Requirement OPNAVINST C9010.339 of 4 FEB 88 established the T-AGOS 19 Class Program. McDermott Inc. was awarded a production contract on 31 OCT 86 for T-AGOS 19-22. T-AGOS 19, 20, and 21 were delivered on 13 AUG 91, 22 JUL 92, and 27 JAN 93, respectively. The Best Estimated Delivery Date (BEDD) for T-AGOS 22 is 16 AUG 93.

(b)(4) [redacted]

7a. Program Highlights (Cont'd):

(b)(4)

[redacted]

This system will satisfy mission requirements.

c. Changes Since As Of Date --
T-AGOS 21 was delivered 27 JAN 93.

On 8 APR 93, ASN(RD&A) approved a Baseline Change Request (BCR) which reflects the current estimate of this SAR.

8. Threshold Breaches:
There are no breaches to the Approved Program Baseline (APB) dated 8 APR 93 and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Production Estimate	Approved Program	Current Estimate
Top Level Requirement (T-AGOS 1 Class)	NOV 76	NOV 76	NOV 76
Production Contract Award: (T-AGOS 1)	SEP 80	SEP 80	SEP 80
Production Started: (T-AGOS 1)	APR 82	APR 82	APR 82
Launch: (T-AGOS 1)	JUL 83	JUL 83	JUL 83
Acceptance Trials: (T-AGOS 1)	MAR 84	MAR 84	MAR 84
Delivery: (T-AGOS 1)	APR 84	APR 84	APR 84
IOC (T-AGOS 1 Class)	SEP 84	SEP 84	SEP 84
Prod Contract Award (T-AGOS 13-18)	APR 85	APR 85	APR 85

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate	
Operational Requirement: (T-AGOS 19) Class	JUN 86	JUN 86	JUN 86	
Prod Contract Award: (T-AGOS 19-22)	OCT 86	OCT 86	OCT 86	
Operational Requirement: (T-AGOS 23 Class)	JUN 87	JUN 87	JUN 87	
Prod. Contract Award: (T-AGOS 11-12)	SEP 87	SEP 87	SEP 87	
Production Started: (T-AGOS 19)	SEP 87	SEP 87	SEP 87	
Follow on Prod. Decision (T-AGOS 20-22)	SEP 88	SEP 88	SEP 88	
Delivery: (T-AGOS 18)	JAN 90	JAN 90	JAN 90	
Launch: (T-AGOS 19)	MAY 90	MAY 90	MAY 90	
Prod. Contract Award: (T-AGOS 23)	MAR 91	MAR 91	MAR 91	
Acceptance Trials: (T-AGOS 19)	JUN 91	JUN 91	JUN 91	
Delivery: (T-AGOS 19)	AUG 91	AUG 91	AUG 91	
IOC (T-AGOS 19 Class)	SEP 92	JUN 93	JUN 93	
Delivery: (T-AGOS 22)	APR 93	APR 93	AUG 93	(Ch-1)
Delivery: (T-AGOS 23)	MAY 94	JAN 95	JAN 95	(Ch-2)
IOC (T-AGOS 23 Class)	DEC 96	AUG 97	AUG 97	(Ch-3)
Delivery: (T-AGOS 28)	JAN 00	JAN 00	JAN 00	
Organic Support Capability Date	N/A	OCT 95	OCT 95	
Service Depot Support Date	N/A	OCT 95	OCT 95	
T-AGOS 19 Class NPDM	N/A	N/A	SEP 88	
T-AGOS 23 Class DCP	N/A	N/A	AUG 89	

b. Previous Change Explanations --

IOC (T-AGOS 19 Class): The T-AGOS 19 Class Initial Operational Capability (IOC) date has changed due to slippages in delivery.

c. Current Change Explanations --

(Ch-1) Delivery: (T-AGOS 22): The delay from APR 93 to AUG 93 is due to cascading impact of delivery slippages of earlier ships.

(Ch-2) Delivery: (T-AGOS 23): The delay from MAY 94 to JAN 95 is due to a lack of production progress.

(Ch-3) IOC (T-AGOS 23 Class): The delay from DEC 96 to AUG 97 is due to a slippage in ship delivery.

9d. **Schedule (Cont'd)**:

d. References --

Production Estimate:
NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated 08 April 1993.

10. **Performance Characteristics**:

a. Performance --	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
T-AGOS 1 Class					
Length Overall (ft)	224	224	/ 224	224	224
Beam (maximum) (ft)	43	43	/ 43	43	43
Draft (mean) (ft)	15'1"	15'1"	/ 15'1"	15'1"	15'1"
Displacement (Ltons)	2285	2285	/ 2285	2285	2285
Propulsion					
Diesel Electric	4	4	/ 4	4	4
Shafts	2	2	/ 2	2	2
SHP (ea)	800	800	/ 800	800	800
Accommodations					
Ship's Company	22	22	/ 22	22	22
Technicians	8	8	/ 8	8	8
Speed (kts)	11	11	/ 11	11	11
Radars	2	2	/ 2	2	2
Sonars	1	1	/ 1	1	1
T-AGOS 19 Class					
Length Overall (ft)	234'6"	234'6"	/ 234'6"	234'6"	234'6"
Beam (maximum) (ft)	93'6"	93'6"	/ 93'6"	93'6"	93'6"
Draft (mean) (ft)	24'9"	24'9"	/ 24'9"	24'9"	24'9"
Displacement (Ltons)	3397	3397	/ 3397	3397	3397
Propulsion					
Diesel Electric	4	4	/ 4	4	4
Shafts	2	2	/ 2	2	2
SHP (ea)	800	800	/ 800	800	800
Accommodations					
Ship's Company	20	20	/ 20	20	20
Technicians	14	14	/ 14	14	14
Speed (kts)	9.6	9.6	/ 9.6	9.6	9.6
Radars	2	2	/ 2	2	2
Sonars	1	1	/ 1	1	1
T-AGOS 23 Class					
Length Overall (ft)	281'6"	281'6"	/ 281'6"		281'6"
Beam (maximum) (ft)	95'9"	95'9"	/ 95'9"		95'9"

T-AGOS SURV SHIP, December 31, 1992

10a. Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Draft (mean) (ft)	26	26 / 26		26
Displacement (Ltons)	5380	5380 / 5380		5380
Propulsion				
Diesel Electric	3	3 / 3		3
Shafts	2	2 / 2		2
SHP (ea)	2500	2500 / 2500		2500
Accommodations				
Ship's Company	26	26 / 26		26
Technicians (19)	19	19 / 19		19
Speed (kts)	12	12 / 12		12
Radars	2	2 / 2		2
Sonars	2	2 / 2		2

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated 08 April 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	22.9	22.9	24.0
Procurement	1104.9	1105.0	886.0
Ship Construction	(1057.1)		(886.0)
Post Delivery	(24.7)		(0.0)
Outfitting	(23.1)		(0.0)
Total Sailaway	(1104.9)		(886.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 78 Base-Year $	1127.8	1127.9	910.0

11a. Total Program Cost and Quantity (Cont'd):

	Production Estimate	Approved Program	Current Estimate
Escalation	903.5	903.4	647.6
Development (RDT&E)	(15.5)	(15.5)	(16.4)
Procurement	(888.0)	(887.9)	(631.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	2031.3	2031.3	1557.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	28	28	25
Total	28	28	25

c. Foreign Military Sales/International Cooperative Programs -- None

d. Nuclear Costs -- None

e. References --

Production Estimate:
NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated 08 April 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1557.6	2031.3	1557.6
(2) Quantity	25	28	25
(3) Unit Cost	62.304	72.546	62.304

12. **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd)**:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	7.0	7.0	0.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	7.0	7.0	0.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

13. **Cost Variance Analysis**:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	38.4	1992.9	0.0	2031.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.3	-44.4	-	-44.7
Quantity	-	-446.6	-	-446.6
Schedule	-	+16.0	-	+16.0
Engineering	-	-	-	-
Estimating	+2.3	-0.7	-	+1.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.0	-475.7	-	-473.7
Total Changes	+2.0	-475.7	-	-473.7
Current Estimate	40.4	1517.2	-	1557.6

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	22.9	1104.9	0.0	1127.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-210.2	-	-210.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.1	-8.7	-	-7.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.1	-218.9	-	-217.8
Total Changes	+1.1	-218.9	-	-217.8
Current Estimate	24.0	886.0	-	910.0

b. Previous Change Explanations -- None.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.1

13c. **Cost Variance Analysis (Cont'd)**:

	(Dollars in Millions) Base-Year	Then-Year
Revised program estimates. (Estimating)	+1.3	+2.4
RDT&E Subtotal	+1.1	+2.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-59.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+15.3
Quantity Variance resulting from decrease of 3 units. (Quantity)	-210.2	-446.6
Change in procurement buy schedule. (Schedule)	--	+16.0
Adjustment for Current & Prior Inflation. (Estimating)	+8.0	+8.4
Revised program estimates. (Estimating)	-16.7	-9.1
Procurement Subtotal	-218.9	-475.7

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes Econ	Qty	Sch	Eng	Est	Other	Spt	Total	PAUC (Current Est)
72.546	-1.788	-9.158	0.640	--	0.064	--	--	-10.242	62.304

15. **Contract Information** (Then-Year Dollars in Millions):

a. Procurement --

T-AGOS 19-22:

MCDERMOTT INC., AMELIA, LA
N00024-87-C-2087, FPIF
Award: October 10, 1986
Definitized: October 31, 1986

Initial Contract Price Target	Ceiling	Qty
$83.5	$91.4	4

Current Contract Price Target	Ceiling	Qty
$93.5	$102.9	4

Estimated Price At Completion Contractor	Program Manager
$102.9	$102.9

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-59.6	$-3.2
Cumulative Variances To Date (12/31/92)	$-55.7	$-1.1
Net Change	$3.9	$2.1

Explanation of Change:

COST and SCHEDULE Variances are due to McDermott's low manhour efficiencies in design and production; labor and overhead rates that are higher than budgeted rates; and overruns in material costs.

(b)(4) [redacted]

T-AGOS 23:	Initial Contract Price Target	Ceiling	Qty
TAMPA SHIPYARDS, INC., TAMPA, FL N00024-91-C-2308, FPIF Award: March 28, 1991 Definitized: March 28, 1991	$53.6	$63.4	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$55.0	$65.0	1	$60.0	$63.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change:

TSI has not yet submitted an acceptable CPR. Lack of accurate cost and schedule information precludes variance calculations.

(b)(4) [redacted]

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 72.0% (18 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 75.9% ($1182.6 / $1557.6)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY76-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	38.4	1.5	0.5	-	40.4
Procurement	1144.2	0.4	5.4	367.2	1517.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1182.6	1.9	5.9	367.2	1557.6

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1976				0.7	0.6	0.6	0.6	6.6
197T								2.9
1977				1.3	1.3	1.3	1.3	2.6
1978				0.7	0.7	0.7	0.7	6.8
1979				0.8	0.9	0.9	0.9	8.4
1980				1.1	1.4	1.4	1.4	10.6
1981				0.1	0.1	0.1	0.1	10.6
1982				0.2	0.3	0.3	0.3	7.6
1983				0.3	0.5	0.5	0.5	4.9

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1984				0.4	0.6	0.6	0.6	3.8
1985				0.9	1.4	1.4	1.4	3.4
1986				3.0	5.0	5.0	5.0	2.8
1987				1.5	2.6	2.6	2.6	2.7
1988				4.2	7.5	7.5	7.5	3.0
1989				3.0	5.5	5.5	5.5	4.2
1990				1.6	3.1	2.3	2.3	4.0
1991				1.2	2.5	2.5	2.5	4.3
1992				1.3	2.7	2.5	1.8	2.8
1993				0.8	1.7			2.4
1994				0.7	1.5			2.4
1995				0.2	0.5			2.4
Subtot				24.0	40.4	35.7	35.0	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1979	2		63.9	62.1	83.2	83.2	83.2	9.6
1980	1		22.7	22.1	32.1	32.1	32.1	9.9
1981	5		131.7	128.4	192.8	192.8	192.8	9.6

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1982	4		118.8	115.8	178.9	178.9	178.9	7.5
1983								3.8
1984				1.7	2.7	2.7	2.7	3.6
1985	2		44.8	45.1	73.4	73.4	73.4	2.1
1986	1		23.7	26.1	43.3	43.3	43.3	1.1
1987	4		108.7	103.3	175.0	172.0	159.2	1.5
1988				6.3	10.9	4.0	2.4	2.3
1989	3		122.8	118.3	209.5	184.7	121.6	2.8
1990	1		73.2	69.4	125.5	125.5	58.9	1.3
1991				1.5	2.7	0.9	0.9	1.3
1992				3.8	7.2	3.6	2.2	1.7
1993				3.6	7.0			2.4
1994				0.2	0.4			2.4
1995				2.7	5.4			2.3
1996	1		93.1	89.1	183.9			2.3
1997	1		82.6	78.3	165.1			2.2
1998				2.4	5.2			2.2
1999				4.0	8.9			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Obligated	Expended	Escl Rate (%)

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

2000				1.8	4.1			2.2
Subtot	25		886.0	886.0	1517.2	1097.1	951.6	
Grand Total	25		886.0	910.0	1557.6	1132.8	986.6	

17. Production Rate Data:

a. Production Baseline Rate

This section is not required for this program. The production rate is less than 6 items per year.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		5.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		367.2		N/A	N/A

17c. Production Rate Data (Cont'd):

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	21/21

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

OSD guidance for the preparation of the initial T-AGOS SAR (DEC 91) included direction that the SAR be ship oriented. As a consequence, none of the costs included in this section are mission related. The T-AGOS 1/19/23 Class Ocean Surveillance Ships are designed to support the Surveillance Towed Array Sensor System (SURTASS) and to collect, process, and transmit acoustic data. The O&S costs associated with these ship classes are based on a useful life of 25 years. Ship design parameters indicate that each ship will consume about 11,000 BBL of fuel each year.

Direct personnel costs involve the annual cost for civilian mariners. Personnel retirement costs are not included in these costs. Direct operating costs include the cost of fuel, repair parts, supplies, training, expended stores, and purchased services. Direct maintenance is based on annual costs averaged over the three T-AGOS programs; indirect costs include overhead. The baseline used to derive the estimates is an average of FY92 Actuals, five-year maintenance cost averages, and FY93 approved expenses.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1978 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per T-AGOS 19 Class	Avg Annual Cost Per T-AGOS 1 Class
Direct Personnel	1.9	1.8
Direct Operations	0.4	0.3
Direct Maintenance	1.2	0.7
Indirect Costs	0.8	0.5
Total	4.3	3.3

c. Contractor Support Costs -- None.

NOTE for Section 18b. Costs: The T-AGOS Class Program consists of three separate and distinct ship classes (T-AGOS 1 Class (Monohull), T-AGOS 19 Class (SWATH), and T-AGOS 23 Class (SWATH)). CARS software does not provide the capability to list the O&S data for these three programs. The following additional information is provided:

COST ELEMENT	Avg Annual Costs Per T-AGOS 1 Class	Avg Annual Costs Per T-AGOS 1 Class*
Direct Personnel	1.8	1.8
Direct Operations	0.3	0.3
Direct Maintenance	0.7	0.7
Indirect Costs	0.5	0.5
TOTAL:	3.3	3.3

* MSC does not have operating experience for an equivalent hull.

COST ELEMENT	Estimated Costs Per T-AGOS 23 Class	Avg Annual Costs Per T-AGOS 19 Class
Direct Personnel	1.9	1.9
Direct Operations	0.4	0.4
Direct Maintenance	1.2	1.2
Indirect Costs	0.8	0.8
TOTAL:	4.3	4.3

AF-3 ATARS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: ATARS

AS OF DATE: December 31, 1992

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Advanced Tactical Air Reconnaissance System (ATARS)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:
Program Manager, ATARS JSPO
Aeronautical Systems Center
Wright-Patterson AFB
Dayton, OH 45433-7017
MR. JOHN C. WILSON, JR.
Assigned: December 7, 1992
AV 785-2939 COMM (513) 255-2939

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0207217F (Shared) Project 3201, 3792
PE 0603239F Project 3048
PROCUREMENT:
APPN 3010 ICN F01600 AF (Air Force)

SAF/PAS
93-262 -T

5. Related Programs:
Tactical reconnaissance platforms: (F-16R), F/A-18D(RC), and Medium Range Unmanned Aerial Vehicle (MR UAV). Joint Services Imagery Processing Systems (JSIPS). Electro Optical-Long Range Oblique Photography (EO-LOROP) System.

6. Mission and Description:
The ATARS program, within the Follow-on Tactical Reconnaissance System (FOTRS) program element, is designed to meet the needs of the

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OASD(PA) DFOISR 93-C-405

6. Mission and Description (Cont'd):

tactical commander for detection, location and classification of tactical targets with sufficient location accuracy and detail to permit the timely delivery of appropriate air or ground launched weapons. The Tactical Air Force Statement of Need 320-79, and corresponding justification for a major system new start, as approved by the Office of the Secretary of Defense in August 82, identified the requirement for near-real-time intelligence information. ATARS focuses on full-scale development of a common family of Electro-Optical/Infrared (EO/IR) sensor suites, data-link sets, recorders, and a reconnaissance management system for upgrade of both US Air Force (USAF) and Department of Navy (DON) manned and unmanned reconnaissance systems. The program is designed to replace the existing film based reconnaissance systems with the above digital EO/IR sensor suites. These sensor suites will be integrated into a mix of tactical reconnaissance platforms, including stand-off and penetrating manned and unmanned vehicles. The ATARS program consists of the following projects:

A. The Tactical Air Reconnaissance System (TARS) project will develop a common reconnaissance suite for manned platforms (DON F/A-18D (RC)), a tactical reconnaissance pod (F-16R), follow-on DON/USAF manned platform, and the RF-4C test bed.

B. The Unmanned Air Reconnaissance System (UARS) consists of either an EO or an IR sensor suite integrated into an unmanned vehicle. The Medium Range Unmanned Aerial Vehicle (MR UAV) is being developed by the Navy Joint Program Office (JPO) for USAF and DON.

C. The Joint Services Imagery Processing System (JSIPS) is a Joint (USAF/USMC/USA) ground station development program with the USAF designated as the lead service. The ground station will provide processing and exploitation of ATARS imagery. The funding provided for JSIPS in not included in the scope of this report.

D. The USAF has identified the F-16R as the Follow-On Tactical Reconnaissance aircraft and directed program initiation in FY92. The F-16R reconnaissance system is being integrated into an external pod for development and operational test and production of the system.

7. Program Highlights:

a. Significant Historical Developments —

ATARS Statement of Need 7 Aug 79 (TAF-SON 320-79), ATARS Mission Element Need Statement validated 22 Sep 80, USDRE approved a Justification for a Major System New Start (JMSNS) 24 Mar 82, funding approved by Congress in FY85 budget, program review DSARC 85, program review/milestone II DSARC Nov/Dec 86, Milestone II Acquisition Decision Memorandum (ADM) 30 Mar 87, ATARS FSD source selection began

7a. Program Highlights (Cont'd):

9 Jul 87, USAF UARS funding was transferred to the JPO in Jan 88, firm fixed price contract awarded to Control Data Corporation on 16 May 88, hardware Preliminary Design Review (PDR) was 31 Oct - 13 Dec 88, software PDR was 14-16 Dec 88, hardware Critical Design Review (CDR) was 22-25 Sep 89, software CDR was 13-18 Nov 89, and the F-18/ATARS PDR was 26-27 Oct 89. The MR UAV contract was awarded by the Navy to Teledyne Ryan Aeronautical on 30 June 89. Funding for F-16R development was zeroed by a program budget decision in Nov 88. On 6 Dec 89, the Air Force Program Review Committee (PRC) approved a 6 squadron F-16R program with full scale development starting in FY91 and production starting in FY93. The Under Secretary of Defense for Acquisition received a Joint Requirements Oversight Council (JROC) recommendation for an OSD decision on 24 May 90 and validated the Air Force requirement for manned reconnaissance. The ATARS program has changed from a major Defense Acquisition Board (DAB) program to a DOD Acquisition Category (ACAT) 1C Program (Component Program). RF-4C has been designated as test bed only. In Dec 90, the Medium Range Unmanned Air Vehicle (MR UAV) program incurred a 3 year delay, which deferred sensor suite integration pending completion of the UAV development and testing. The ATARS prime contractor, Control Data Corporation, sold the ATARS contract to Martin Marietta Electronic Systems, Orlando, Florida. The novation was signed in Feb 91. Funding for the F-16R program was added to the FY92 President's Budget. A revised Program Management Directive (PMD 5063(10), 27 Mar 91) authorized an F-16R reconnaissance capability program for start-up in FY92. An F-16R program strategy was briefed to HQ TAC in Jul 91. The baseline program option for 54 combat coded F-16Rs was submitted to the Office of the Secretary of Defense (OSD) in the FY94-99 Program Objective Memorandum (POM). This organizes the program to stay within the funding in the FY93 Amended President's Budget. A supplemental agreement incorporating the requirements (technical, schedule, and cost) to rebaseline the program was signed by both the prime contractor, Martin Marietta Electronic Systems, and the government on 20 Aug 92 for a $36M modification to the contract (including a $3.6M credit).

b. Significant Developments Since Last Report --

ATARS management oversight has been transferred from ASC/CC to the Air Force Program Executive Office for Command, Control, and Communications (AFPEO/C3) in Nov 92. The program office was brought under the newly established Follow-On Tactical Reconnaissance (FOTRS) Directorate and a new program manager was assigned in Dec 92.

A reduction in quantities from 105 to 50 has resulted in a Nunn-McCurdy Program Acquisition Unit Cost (PAUC) breach of 128%. Details of this breach can be found in Section 12 of this report.

7b. Program Highlights (Cont'd):

ATARS is expected to meet mission requirements. Due to recent cost growth, the approved funding does not support the reported quantity. Continuing affordability review will align quantities and funding.

c. Changes Since As Of Date --

A new FOTRS Director, Col Thomas W. Holycross, was assigned Jan 93.

Three expert teams were formed to identify the root causes of the program's continued problems. These include a technical team for the Medium Altitude Electro Optic (MAEO) Sensor, a manufacturing team to review digital tape recorders producibility/affordability issues, and a cost team to update the estimated production costs.

A General Flag Officer Review was conducted on 25 Feb 93 to evaluate the impact of the revised ATARS RDT&E and Production cost projections. A decision review is scheduled for 21 Apr 93.

Two RF-4C suites and one Medium Range Unmanned Aerial Vehicle suite have been accepted by the government.

DT&E began with the RF-4C on 24 Feb 93. Nine missions have been flown through 31 Mar 93. Although problems are being identified and resolved, excellent imagery is being obtained.

A revised PMD will be prepared to capture results of the 21 Apr 93 General Flag Officer review.

8. Threshold Breaches:
There are no breaches to the Acquisistion Program Baseline (APB) dated 13 Nov 92.

A Nunn-McCurdy unit cost breach notification was submitted in Feb 93 that reflects a unit cost increase of 128% from the Dec 91 SAR. Unit cost breach information is provided in Section 12.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Defense Acquisition Board (DAB) 0	AUG 82	AUG 82	AUG 82
Defense Acquisition Board I	DEC 85	DEC 85	DEC 85

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Defense Acquisition Board II	NOV 86	NOV 86	NOV 86
ATARS Acquisition Decision Milestone (ADM)	MAR 87	MAR 87	MAR 87
FSD Contract Award	MAY 88	MAY 88	MAY 88
Hardware Preliminary Design Review (PDR)	OCT 88	NOV 88	NOV 88
Software Preliminary Design Review	N/A	DEC 88	DEC 88
Hardware Critical Design Review (CDR)	APR 89	SEP 89	SEP 89
Software Critical Design Review	N/A	NOV 89	NOV 89
First FSD ATARS Sensor Suite Delivery	N/A	DEC 92	JAN 93(Ch-1)
First Development Flight Release	N/A	DEC 92	FEB 93(Ch-1)
Development Test Start (1st Platform - RF-4C)	N/A	JAN 93	FEB 93(Ch-1)
ACSS Milestone IIIA (LRIP) Production Decision	AUG 91	OCT 94	FEB 95(Ch-1)
Development Test Complete (Last Platform - F-16R)	N/A	DEC 96	DEC 96
Operational Test Start (1st Platform - F/A-18D(RC))	N/A	FEB 94	MAY 94(Ch-1)
Operational Test Complete (Last Platform - F-16R)	N/A	APR 97	APR 97
First LRIP Delivery - ATARS common sensor suites	N/A	DEC 96	MAY 97(Ch-1)
ACSS MS III	SEP 93	OCT 97	OCT 97
IOC	SEP 93	MAR 99	MAR 99

NOTES:

(1) The "Current Estimate" dates reflect schedule dates as of 31 Mar 93.

(2) The first three milestone titles should read "Milestone" instead of "Defense Acquisition Board".

(3) The fourth milestone title should read "ATARS Acquisition Decision Memorandum" instead of "Milestone".

b. Previous Change Explanations --

The Hardware PDR began 31 Oct 88 but is recognized as occurring in Nov 88. Critical Design Review was changed from Apr 89 to Jul-Sep 89 due to difficulties in receiving technical data on the ATARS platform; however, there is no impact to cost or other milestones.

9b. Schedule (Cont'd):
The Hardware CDR was completed in Sep 89. The ATARS FSD contract was rebaselined on 20 Aug 92 to reestablish cost, schedule, and technical parameters. The "Current Estimate" schedule reflects the revised program milestones (for the 54 combat coded option) as a result of the rebaseline. The baseline program option for 54 combat coded F-16Rs was submitted to OSD in the FY94-99 POM. This organized the program to stay within the funding in the FY93 Amended President's Budget.

c. Current Change Explanations --

(CH-1): Continued delays in delivery of hardware necessitate revision of the program schedule. The ATARS FSD contract schedule is currently being reset. The "Current Estimate" schedule reflects the revised program milestones.

d. References --

Development Estimate:
Program Management Directive 5063(5)
/0207217F/0207213F/0207435F/0301328F/0603239F, 15 APR 87.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 13 November 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Modes				
Low Altitude Sensor	N/A	Forward oblique or vertical position. / Forward oblique or vertical position.	N/A	Forward oblique or vertical position.
Medium Altitude Sensor	N/A	Left/ right oblique or vertical position / Left/ right oblique or vertical position	N/A	Left/ right oblique or vertical position

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Mission Conditions	N/A	Day/night & under-the-weather conditions. / Day/night & under-the-weather conditions.	N/A	Day/night & under-the-weather conditions.
Physical Characteristics				
Weight	N/A	Will not exceed msn equip wt limits on carriage platforms. / Will not exceed msn equip wt limits on carriage platforms.	N/A	Will not exceed msn equip wt limits on carriage platforms.
Dimensions	N/A	Fit existing RF-4C msn equip bay & not exceed dimension limitations of UARS, & F/A-18D, & F-16 pod. / Fit existing RF-4C msn equip bay & not exceed dimension limitations of UARS, & F/A-18D, & F-16 pod.	N/A	Fit existing RF-4C msn equip bay & not exceed dimension limitations of UARS, & F/A-18D, & F-16 pod.

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Structural Criteria	N/A	Must withstand low-high altitude operations & tactical standoff tactics. Equip shall operate w/in flight maneuver envelope of applicable aircraft to accomplish ATARS msns. / Must withstand low-high altitude operations & tactical standoff tactics. Equip shall operate w/in flight maneuver envelope of applicable aircraft to accomplish ATARS msns.	N/A	Must withstand low-high altitude operations & tactical standoff tactics. Equip shall operate w/in flight maneuver envelope of applicable aircraft to accomplish ATARS msns.
Environmental Criteria	N/A	Climatic extremes as defined in ATARS System Req't Spec for multi-platform applications. / Climatic extremes as defined in ATARS System Req't Spec for multi-platform applications.	N/A	Climatic extremes as defined in ATARS System Req't Spec for multi-platform applications.

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Environmental Control	N/A	Compatible w/req'd platforms.	/ Compatible w/req'd platforms.	N/A	Compatible w/req'd platforms.
Image Quality	N/A	Adequate to detect, recognize & identify (Phase I) the 17 classes of tactical targets.	/ Adequate to detect, recognize & identify (Phase I) the 17 classes of tactical targets.	N/A	Adequate to detect, recognize & identify (Phase I) the 17 classes of tactical targets.
Field of View (FOV) Infrared Sensor	N/A	Min FOV of 180 deg.	/ Min FOV of 140 deg.	N/A	Min FOV of 140 deg.
Low Altitude Visible Light Sensor	N/A	Min FOV of 140 deg. Wide FOV to provide vertical and forward oblique imaging capabilities in manual or automatic.	/ Min FOV of 140 deg. Wide FOV to provide vertical and forward oblique imaging capabilities in manual or automatic.	N/A	Min FOV of 140 deg. Wide FOV to provide vertical and forward oblique imaging capabilities in manual or automatic.

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Medium Altitude Visible Light Sensor	N/A	Min FOV of 21 deg. Narrow FOV to provide vertical & side oblique imaging capabilities in manual or automatic.	/ Min FOV of 21 deg. Narrow FOV to provide vertical & side oblique imaging capabilities in manual or automatic.	N/A	Min FOV of 21 deg. Narrow FOV to provide vertical & side oblique imaging capabilities in manual or automatic.
Image Interpretability Rating Scale (IIRS)					
Low Altitude Visible Light Sensor	N/A	Produce IIRS 5 quality imagery.	/ Produce IIRS 5 quality imagery.	N/A	Produce IIRS 5 quality imagery.
Medium Altitude Visible Light Sensor	N/A	Min IIRS 7 quality.	/ Min IIRS 5 quality.	N/A	Min IIRS 5 quality.
Velocity	N/A	Altitude ratios V/H between 0.04 and 5.0 rad per sec. Operation velocities 200-600 knot ground speed.	/ Altitude ratios V/H between 0.04 and 5.0 rad per sec. Operation velocities 200-600 knot ground speed.	N/A	Altitude ratios V/H between 0.04 and 5.0 rad per sec. Operation velocities 200-600 knot ground speed.

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Infrared Sensor	N/A	New IR sensor for all platform applications with operational performance equal to or better than AAD - 5.	/ New IR sensor for all platform applications with operational performance equal to or better than AAD - 5.	N/A	New IR sensor for all platform applications with operational performance equal to or better than AAD -5.
Computer Hardware/ Software					
Language	N/A	Operational SW for ATARS PMH shall be programmed in ADA.	/ Operational SW for ATARS PMH shall be programmed in ADA.	N/A	Operational SW for ATARS PMH shall be programmed in ADA.
Memory Reserve	N/A	61% of total memory	/ 61% of total memory	N/A	61% of total memory.
Throughput Reserve	N/A	60% of usable spare	/ 60% of usable spare	N/A	60% usable spare.
Memory Growth	N/A	Expandable to 200%.	/ Expandable to 200%.	N/A	Expandable to 200%.

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Architecture	N/A	Firmware shall be designed documented, & otherwise treated as software. All newly developed software shall be designed using object-oriented design, which is a top down structured technique. All newly developed software shall be developed in accordance with DOD-STD-2167A as tailored.	/ Firmware shall be designed documented, & otherwise treated as software. All newly developed software shall be designed using object-oriented design, which is a top down structured technique. All newly developed software shall be developed in accordance with DOD-STD-2167A as tailored.	N/A	Firmware shall be designed documented, & otherwise treated as software. All newly developed software shall be designed using object-oriented design, which is a top down structured technique. All newly developed software shall be developed in accordance with DOD-STD-2167A as tailored

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Data Bus	N/A	MIL-STD-1553B Multiplex Bus. / MIL-STD-1553B Multiplex Bus.	N/A	MIL-STD-1553B Multiplex Bus.
Data Link	N/A	Installation in pod for RF-4C. Near realtime sensor transmission. Installation in F-16R pod. / Installation in pod for RF-4C. Near realtime sensor transmission. Installation in F-16R pod.	N/A	Installation in pod for RF-4C. Near realtime sensor transmission. Installation in F-16R pod.
Mission Readiness				
Launch From Combat Alert				
UARS (min)	N/A	3 / 5	N/A	5
F/A-18D (min)	N/A	3 / 5	N/A	5
F-16 (min)	N/A	3 / 5	N/A	5
Integrated Combat Turnaround				
UARS (hrs)	N/A	4 / 6	N/A	6
F/A-18D (min)	45	35 / 35	N/A	35
F-16 (min)	N/A	25 / 25	N/A	25
Reliability and Maintainability 2/				
Subsystem Break Rate (%)				
UARS 1/	N/A	.75 / .75	N/A	.75
F/A-18D	1.2	1.22 / 1.22	N/A	1.22
F-16 Pod	NA	1.24 / 1.24	N/A	1.24
Subsystem Mean Repair Time (min)				
UARS on Equip	20	20 / 60	N/A	60
UARS off Equip	60	60 / 60	N/A	60
F/A-18D on Equip	N/A	20 / 20	N/A	20

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
F/A-18D off Equip	N/A	60 / 60	N/A	60
F-16 on Equip	N/A	20 / 20	N/A	20
F-16 off Equip	N/A	60 / 60	N/A	60
Airlift Support: One Squadron w/ O-level maintenance, C-141B equivalent.				
UARS Sensor Suite Support	N/A	1 463-L pallet / 1 463-L pallet	N/A	1 463-L pallet
F/A-18D	N/A	.22 463-L pallet / .22 463-L pallet	N/A	.22 463-L pallet
F-16 Pod	N/A	1 463-L pallet / 1 463-L pallet	N/A	1 463-L pallet

1/ UARS break rate is based on use of visual sensor only.

2/ Mature system values are shown. A growth curve will be applied to EMD to achieve mature value.

b. Previous Change Explanations --

Negotiated change from 1.2 to .95 at FSD contract award for the Sensor suite break rate. "Memory Reserve" reduced from 67% to 61% as a result of the 20 Aug 92 FSD rebaseline agreement. "Throughput Reserve" reduced from 67% to 60% as a result of the 20 Aug 92 FSD rebaseline agreement. "Software Architecture" was updated to be developed in accordance with DOD-STD 2167A instead of DOD-STD 2167.

c. Current Change Explanations -- -- None.

d. References --

Development Estimate:
Program Management Directive 5063(5)
/0207217F/0207213F/0207435F/0301328F/0603239F, 15 APR 87.

Approved Program:
AFAE Approved Acquisition Program Baseline dated 13 November 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	163.8	349.2	345.7
Procurement	811.0	290.0	261.6
Flyaway	(697.6)		(213.9)
Other Wpn Sys	(73.3)		(11.9)
Peculiar Support	(0.0)		(19.6)
Initial Spares	(40.1)		(16.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 85 Base-Year $	974.8	639.2	607.3
Escalation	317.7	270.9	225.8
Development (RDT&E)	(30.1)	(104.6)	(97.4)
Procurement	(287.6)	(166.3)	(128.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1292.5	910.1	833.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	560	50	50
Total	560	50	50

NOTE:

(1) Excludes 12 RDT&E units that are not considered to be fully configured.

(2) Other platform approved funding (TY$) and quantities not included in above:
(a) F/A-18 RDT&E = $20.8M; quantity = 3.
(b) UAV RDT&E = $46.4M; quantity = 3.
(c) F/A-18 Production = $68.6M; quantity = 77.
(d) UAV Production = $1264M; quantity = 488.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
Program Management Directive 5063(5)
/0207217F/0207213F/0207435F/0301328F/0603239F, 15 APR 87.

11e. Total Program Cost and Quantity (Cont'd):

Approved Program:
AFAE Approved Acquisition Program Baseline dated 13 November 1992.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	833.1	797.3	833.1
(2) Quantity	50	105	50
(3) Unit Cost	16.662	7.593	16.662
b. Current Procurement —	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	13.1	13.1	13.4
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	13.1	13.1	13.4
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
c. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (BY85$)	607.3	572.6	607.3
(2) Unit Cost	12.146	5.453	12.146
d. Current Procurement —	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (BY85$)	9.6	9.6	9.6
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	9.6	9.6	9.6
(2) Unit Cost	N/A	N/A	N/A

e. Changes from the Baseline Report - (DEC 91 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	9.069	119.44
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-55	-52.38
(4) PAUC (BY85$)	6.693	122.74
(5) CPUC (BY85$)	0.000	N/A

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

f. Changes from the Previous SAR - (SEP 92 SAR)

	Changes in $ or Qty	Percent Change
(1) PAUC (TY$)	9.402	129.50
(2) CPUC (TY$)	0.000	N/A
(3) PAUC Quantity	-55	-52.38
(4) PAUC (BY85$)	6.923	132.55
(5) CPUC (BY85$)	0.000	N/A

g. Initial SAR (DEC 87)

(1) Program Acquisition Cost (TY$) -- 837.9
(2) Program Acquisition Cost (BY$) -- 640.8

h. Unit Cost Changes.

(1) PAUC --

Program quantity decreased from 105 to 50 ATARS common sensor suites. Also, RDT&E dollars increased and production dollars decreased. See Section 13 for detailed explanation by category for the increase and decrease in the appropriations.

(2) CPUC --

N/A

i. Impact of Performance or Schedule Changes on Unit Cost.

1. The Nov 92 Acquisition Program Baseline (APB) noted a quantity decrease from 105 to 50 ATARS common sensor suites. Also, the ATARS development schedule has lengthened by 24 months due to late hardware deliveries and extension of the time period between the end of DT&E and the LRIP decision. Delivery of the first Low Rate Initial Production suite has been delayed by 28 months due to the lengthened development period as well as recognition of a lengthened manufacturing time. The Milestone III production decision for ATARS F-16R suites has been delayed by 28 months.

2. The Nov 92 APB also noted the impact on the average unit procurement cost (BY85$) increase from $3.246M to $5.8M, which is an increase of 79%.

3. A Mar 93 Program Deviation Report notes another increase in the average unit procurement cost (BY85$) from $5.8M to $8.12M, a 40% increase.

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

j. Program Management and Control.

Points of Contact:

MR. JOHN C. WILSON, JR.
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Wright-Patterson AFB
Dayton, OH 45433-7017
Comm Ph: (513) 255-2939

MR. DONALD A. OSBORNE
Chief, Financial Management Division
Reconnaissance SPO
Aeronautical Systems Center
Wright-Patterson AFB
Dayton, OH 45433-7017
Comm Ph: (513) 255-2673
Autovon: 785-2673

k. Cost Control Actions.

The Martin Marietta Corporation (MMC) is in an overrun position on the ATARS Firm Fixed Price Engineering, Manufacturing, and Development (EMD) contract. The latest contractor estimate at completion ($274M) indicates that the cost will exceed the contract price of $187.6M by approximately $86.4M. The Defense Plant Representative Office current estimate at completion is $286M. Since the contract ceiling price is fixed, the contractor is absorbing the overrun. Although the program office continues to work with MMC management to insure that timely and meaningful communication is maintained, it is not anticipated that this overrun situation will be reversed or appreciably reduced.

l. Contract Information (In Millions of Then-Year Dollars) --

(1) Contractor(s): Martin Marietta Elec.,
(2) Contract Title: ATARS SENSOR SUITES
(3) Contract Number:F33657-87-C-0103
(4) Actual Cost of Work Performed (ACWP) to date: 214.9
(5) Percent contract completed (BCWP/target cost): 0.80

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

(6) Variances:

	Cost Variance ($/%)	Schedule Variance ($/%)
SAR Values as of 12/31/91	$-7.5/-0.20%	$+2.6/-0.04%
Previous SAR	$-11.2/-0.07%	$-4.9/-0.03%
Current values	$-4.2/-0.02%	$-2.6/-0.01%
Change from the baseline SAR	$+3.3/+0.18%	$-5.2/+0.03%
Change from the previous SAR	$+7.0/+0.05%	$+2.3/+0.02%

(7) Explanation of Variances. -

The cost and schedule variances reflect a slip in the sensor suite deliveries in relation to the baseline schedule. Additional manpower was required to resolve issues in finalizing delivery of the sensor suite units.

(8) Impact of Variances on Contract. -

A delay in the sensor suite deliveries caused a slip in the start of DT&E by one month under the rebaselined schedule from Jan 93 to Feb 93.

(9) Impact of Variances on Unit Costs. -

This is a Firm Fixed Price contract. See Section 12.k.

m. Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	193.9	1098.6	0.0	1292.5
Previous Changes:				
Economic	-0.4	-30.7	-	-31.1
Quantity	-	-559.9	-	-559.9
Schedule	-	-	-	-
Engineering	+119.4	-	-	+119.4
Estimating	-2.7	+70.2	-	+67.5
Other	-16.4	-	-	-16.4
Support	-7.8	-101.9	-	-109.7
Subtotal	+92.1	-622.3	-	-530.2
Current Changes:				
Economic	-0.7	+9.7	-	+9.0
Quantity	-	-302.2	-	-302.2
Schedule	-	+16.3	-	+16.3
Engineering	-	-	-	-
Estimating	+157.8	+181.8	-	+339.6
Other	-	-	-	-
Support	-	+8.1	-	+8.1
Subtotal	+157.1	-86.3	-	+70.8
Total Changes	+249.2	-708.6	-	-459.4
Current Estimate	443.1	390.0	-	833.1

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	163.8	811.0	0.0	974.8
Previous Changes:				
Quantity	-	-470.2	-	-470.2
Schedule	-	-	-	-
Engineering	+90.0	-	-	+90.0
Estimating	-3.7	+46.7	-	+43.0
Other	-11.9	-	-	-11.9
Support	-6.4	-70.9	-	-77.3
Subtotal	+68.0	-494.4	-	-426.4
Current Changes:				
Quantity	-	-187.0	-	-187.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+113.9	+126.8	-	+240.7
Other	-	-	-	-
Support	-	+5.2	-	+5.2
Subtotal	+113.9	-55.0	-	+58.9
Total Changes	+181.9	-549.4	-	-367.5
Current Estimate	345.7	261.6	-	607.3

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Engineering: Addition of F-16R Multi-National Pod. Deletion of funding for F-16R effort.

Estimating: Addition of dual sourcing, 3 Common sensor suites moved to TARS (Formerly under UARS, but directed to be under TARS), funding for F-16R planning effort was added then subsequently reduced, reduction of dual sourcing previously added, and adjustment for current and prior year escalation; and adjustments for current and prior year estimating.

Other: Funding for UARS effort transferred to Joint UAV program.

13b. Cost Variance Analysis (Cont'd):

Support: Deletion of simulator.

Procurement

Economic: Revised economic escalation indices.

Quantity: Production funding not approved for manned aircraft and funding for UARS effort transferred to Joint UAV program.

Estimating: Correction to Dec 89 SAR to reconcile other weapon systems and initial spares. Adjustments to current year estimating. Revised estimate to reflect reduction in FY94 funding.

Support: Correction to Dec 89 SAR to reconcile other weapon systems and initial spares.
Increase in Peculiar Support Equipment.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.7
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.2
Reduction of budget authority. (Estimating)	-2.6	-3.0
Increase in budget authority for risk reduction/rebaseline. (Estimating)	+3.3	+4.3
Refinement of cost estimate with better program definition. (Estimating)	+108.2	+149.7
Rebaseline agreement. (Estimating)	+5.2	+7.0
RDT&E Subtotal	+113.9	+157.1
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-22.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+32.4
Total Variance associated with decrease of 55 units.	-187.2	-302.6
Quantity Variance resulting from decrease of 55 units. (Quantity)	-187.0	-302.2
Estimating Variance associated with Quantity Decrease. (Estimating)	-0.2	-0.3

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Change in procurement buy schedule. (Schedule)	--	+16.3
Adjustment for Current & Prior Inflation. (Estimating)	+1.0	+1.4
Refinement of cost estimate with better program definition. Includes an increase in PME, warranty, test, mission support. (Estimating)	+126.0	+180.7
Increase in initial spares for the ATARS common sensor suites as well as the F-16 spares. (Support)	+14.6	+22.1
Increase in organization, depot, and interim support. (Support)	+19.4	+27.6
Decrease in data and Terrain Following radar mod. (Support)	-28.8	-41.6
Procurement Subtotal	-55.0	-86.3

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.308	-0.442	6.300	0.326	2.388	8.142	-0.328	-2.032	14.354	16.662

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

ATARS SENSOR SUITES:

Martin Marietta Elec.,, Orlando, FL
F33657-87-C-0103, FFP
Award: May 16, 1988
Definitized: May 16, 1988

Initial Contract Price		
Target	Ceiling	Qty
$118.6	N/A	9

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$187.6	N/A	12	$274.0	$275.0

15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-11.2	$-4.9
Cumulative Variances To Date (12/31/92)	$-4.2	$-2.6
Net Change	$7.0	$2.3

Explanation of Change:

The cost and schedule variances reflect a slip in the sensor suite deliveries in relation to the baseline schedule. Additional manpower was required to resolve issues in finalizing delivery of the sensor suite units.

NOTE:

(1) The ATARS original prime contractor, Control Data Corporation, was awarded the ATARS contract in May 1988. Control Data Corporation sold the ATARS contract to Martin Marietta Electronic Systems, Orlando, Florida. The novation was signed in Feb 1991.

(2) Total contract quantity of 12 units is made up of 6 Air Force, 3 F/A-18D(RC), and 3 UARS units.

(3) The program manager's estimate at completion (EAC) is $275M ($87.4M more than the contract price of $187.6M). This government EAC is based on Jan 93 Cost Performance Report (CPR) data which indicated the contractor's latest revised estimate was $274M. Based on this CPR, the Defense Plant Representative Office estimates an EAC of $286M.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 52.9% (9 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 33.5% ($279.3 / $833.1)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY85-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2001)	Total
RDT&E	266.2	54.9	59.3	62.7	443.1
Procurement	13.1	13.4	52.7	310.8	390.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	279.3	68.3	112.0	373.5	833.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
1985				2.7	2.8	2.8	2.8	3.4
1986				2.1	2.2	2.2	2.2	2.8
1987				8.2	8.9	8.9	8.9	2.7
1988				28.7	32.3	32.3	13.3	2.9
1989				37.1	43.2	43.2	33.8	4.2
1990				36.8	44.6	44.6	35.0	4.0
1991				22.5	28.2	28.2	9.0	4.3
1992				40.4	51.9	32.6	11.3	2.8
1993				39.6	52.1	5.0	0.3	2.4

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
1994				40.8	54.9			2.4
1995				43.0	59.3			2.3
1996				24.8	34.9			2.3
1997				11.7	16.9			2.2
1998				4.5	6.6			2.2
1999				2.5	3.8			2.2
2000				0.3	0.5			2.2
Subtot				345.7	443.1	199.8	116.6	

NOTES:

(1) RDT&E funds are under a shared program element between JSIPS and ATARS, above funds reflect ATARS development only.

(2) FY87 includes .2M of Air Force funded UARS from PE 0603239F.

(3) Obligations and expenditures reflect data as of 31 Mar 93.

Appropriation: 3010 Aircraft Procurement, Air Force								
1993				9.6	13.1			2.4
1994				9.6	13.4			2.4
1995		15.6		37.0	52.7			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1996	10	5.3	42.5	59.5	86.7			2.3
1997	4	4.0	15.5	29.6	44.0			2.2
1998	10	2.3	36.2	43.8	66.6			2.2
1999	10	1.9	34.9	53.4	83.1			2.2
2000	11		37.2	17.6	27.9			2.2
2001	5		18.5	1.5	2.5			2.2
2002								2.2
Subtot	50	29.1	184.8	261.6	390.0			
Grand Total	50	29.1	184.8	607.3	833.1	199.8	116.6	

17. Production Rate Data:

a. Production Baseline Rate

This program is pre-Milestone III; however, the planned production quantities are 10, 4, 10, 10, 11, and 5 for FY96 through FY01 respectively.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	13.4	0.0	-13.4	-13.4
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	45.3	52.7	0.0	-7.4	-52.7
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	344.7	310.8	0.0	+33.9	-310.8

NOTE:

Production quantities start in FY96. The dollars in FY95 reflect tooling/nonrecurring costs as well as support equipment costs.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	12/6
Procurement	50/0

NOTE:

The 12 RDT&E units are not intended to be used as operational end items.

d. Approved Design-to-Cost Objective -- N/A.

Note:

ATARS is not a Design-to-Cost program.

18. Operating and Support Costs:

18a. Operating and Support Costs (Cont'd):

a. Assumptions and Ground Rules --

(1) Operations and Support Cost estimate data is 20 Nov 92. The program office is currently working with ASC/AL to update this estimate and will incorporate the results into the next update to the Annual Estimate.

(2) Developed using the Standardization and Evaluation Program 4.1 model and ground-up estimates. Software maintenance costs were developed on the REVIC model.

(3) The estimate covers the employment of the system in three different platforms; the F-16R, the F/A-18 (Navy), Unmanned Air Vehicle (UAV) (Air Force and Navy).

(4) The RF-4C is the antecedent system for the ATARS program. There is no O&S data for that program.

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 105	Avg Annual Cost Per Antecedent
Repair Labor	0.1	N/A
SE Equipment Maintenance	0.0	N/A
Recurring Training	0.0	N/A
Rep Parts Material	0.2	N/A
Consumables	0.0	N/A
Condemn spares	0.0	N/A
Technical Data Revisions	0.0	N/A
Transportation	0.0	N/A
Software Maintenance	0.1	N/A
Engineering Changes	0.1	N/A
Total	0.5	N/A

c. Contractor Support Costs -- None.

NOTES:
(1) The costs in part b reflect the F-16R only. The comparable costs (average annual cost per 31) for the F/A-18 in total are .5. The comparable costs (average annual cost per 525) for the UAV in total are .4.

(2) Interim contractor support costs are included in the 3010 appropriation in accordance with AFSC/CB message 141810Z, dated 14 Jun 91.

(3) Above costs that are zero reflect average annual costs per 105 units less then $100,000. The 105 quantity reflects the prior baseline to the program. The current quantity of 50 ATARS Common Sensor Suites will be reflected in the next OSS estimate.

AF-23 MILSTAR

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92-016

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MILSTAR

AS OF DATE: December 31, 1992

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MAY 25 1993 10

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) **Designation and Nomenclature (Preferred Name):**
   Milstar Satellite Communications Systems

2. (U) **DoD Component:** USAF

3. (U) **Responsible Office and Telephone Number:**
   SMC/MC
   2420 Vela Way
   Suite 1467-A8
   Los Angeles AFB, CA 90245-4659

   BGen Leonard F. Kwiatkowski
   Assigned: December 9, 1991
   AV 833-4877 COMM 310-336-4877

4. (U) **Program Elements/Procurement Line Items:**

   RDT&E:
   PE 0303601F, 0303603F
   PROCUREMENT:
   APPN 3080 ICN 20MLSTRS (Air Force)
   APPN 1506 ICN 20MLSTRS (Navy)
   APPN 3010 ICN 20MLSTRS (Air Force)
   APPN 3020 ICN 20MLSTRS (Air Force)

OASD(PA) DFOISR 93-476

~~Classified by: Milstar Security Classification Guide, 15 Apr 91~~
~~Declassify on: Originating Agency Determination Required~~
~~Downgrade Instructions: Not Subject to Automatic Downgrade~~

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SAF/PAS

93-312 -T

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4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:
PE 0303601F

5. (U) Related Programs:
Secure Mobile Anti-jam Reliable Tactical Terminal (SMART-T)
Single Channel Anti-jam Manportable (SCAMP)
Navy Extremely High Frequency Satellite Communications Program (NESP)
Titan IV Space Launch Vehicle

6. (U) Mission and Description:
The Milstar Satellite Communications System which in part takes over the mission of DSCS and AFSATCOM, is a joint service program to develop and acquire the Milstar satellite, its mission control segment, and Army, Navy and Air Force communications terminals. The Milstar system will provide survivable, jam-resistant, world-wide secure communications for the National Command Authorities and Commanders-in-Chief to command and control their tactical and strategic forces at all levels of conflict up through the early stages of general nuclear war.

7. (U) Program Highlights:
a. (U) Significant Historical Developments --
In 1983, the Milstar Satellite Communications System program was designated as a highest national priority. After a short feasibility study, the Space and Mission Control program proceeded directly into the Full Scale Development (FSD) phase. The FSD contract was awarded in Jun 83.

The Command Post (CP) Terminal Program began in 1983 with a demonstration/validation phase. Full Scale Development began in Jun 83 with a Raytheon/Rockwell team awarded the FSD contract under a leader/follower strategy. Milestone IIIA for Low-Rate Initial Production (LRIP) was held in May 89. LRIP contracts to procure Command Post Terminals were awarded in Sep 89.

In the National Defense Authorization Act for FY 1991, the Congress directed the Department of Defense to restructure the Milstar system to reduce cost, increase the utility of the system for tactical users, and eliminate enduring nuclear warfighting capabilities. As a result, the number of satellites, mission control stations and terminals was reduced. Furthermore, features associated with nuclear hardness and survivability were reduced and capabilities to support tactical requirements were added. The Milstar II satellite will incorporate the Low Data Rate payload of the original Milstar satellite and add a new Medium Data Rate payload. Contract for the Milstar II satellite development was awarded in Oct 92 following a successful Oct 92 Defense Acquisition Board (DAB) Program Review.

The Low Cost Terminal (LCT) was intended to meet the requirement to support users at a lower cost while retaining nearly the same

7a. (U) Program Highlights (Cont'd):

functionality of the CP Terminal. Risk reduction contracts were awarded in Jan 92. In Aug 92 the LCT program was designated a low level technology demonstration program.

In Dec 92 the first Development Flight Satellite (DFS-1) was delivered to storage in preparation for a FY93 launch.

b. (U) Significant Developments Since Last Report --
This is the initial Selected Acquisition Report for the MILSTAR program. This SAR includes only the Space, Mission Control and AF terminal segments.

The Milstar program is expected to satisfy its current mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:
There are currently schedule breaches to the Acquisition Program Baseline (APB) (dated 28 Oct 92). There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:
Satellites

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Milstar I Dev Contract Award	JUN 83	JUN 83	JUN 83
LDR Payload/Bus CDR	JUL 87	JUL 87	JUL 87
Mission Control Segment CDR	AUG 88	AUG 88	AUG 88
DAB Program Review	SEP 92	SEP 92	OCT 92
Milstar II Contract Award	OCT 92	OCT 92	OCT 92
Satellite 1 Delivery	DEC 92	DEC 92	DEC 92
Satellite 1 On-Orbit DT&E	[redacted]		

(b)(1) [redacted]

9a. (U) Schedule (Cont'd):
Satellites

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Milstar II IOT&E			
Start	APR 99	APR 99	JAN 00(Ch-2)
Complete	SEP 99	SEP 99	JUN 00(Ch-2)
Milstar II MS III	SEP 99	SEP 99	JUN 00(Ch-2)

(b)(1) [redacted]

Acronyms & Abbreviations:
****
CDR - Critical Design Review
DAB - Defense Acquisition Board
Dev - Development
FOC - Full Operational Capability
IOC - Initial Operational Capability
LDR - Low Data Rate
MS - Milestone

b. (U) Previous Change Explanations --

None. This is the initial Selected Acquisition Report.

c. (U) Current Change Explanations --

(Ch-1) An Aug 92 launch failure of a Centaur upper stage on a Titan IV launch vehicle has delayed the launch of the first Development Flight Satellite (DFS-1).

(Ch-2) Milestone change associated with the $180M budget reduction.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

9d. (U) Schedule (Cont'd):
CP Terminals

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Critical Design Review	FEB 84	FEB 84	FEB 84
Phase II Development			
Start	JUN 85	JUN 85	JUN 85
Complete	JUN 91	JUN 91	JUN 91
MS IIIA	MAY 89	MAY 89	MAY 89
First Delivery	AUG 92	AUG 92	AUG 92
Satellite 1 On-Orbit DT&E			

(b)(1)

[redacted]

Acronyms & Abbreviations:
****
CDR - Critical Design Review
CP - Command Post
Dev - Development
MS - Milestone

b. (U) Previous Change Explanations --

None. This is the initial Selected Acquisition Report.

c. (U) Current Change Explanations --

(Ch-1) An Aug 92 launch failure of a Centaur upper stage on a Titan IV launch vehicle has delayed the launch of the first Development Flight Satellite (DFS-1).

(Ch-2) Milestone change due to planned revisions to the APB.

(Ch-3) Milestone change associated with the $180M budget reduction.

9d. (U) Schedule (Cont'd):
CP Terminals

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

10. (U) Performance Characteristics:
Satellites

a. (U) Performance —

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

10a. (U) Performance Characteristics (Cont'd):
Satellites

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Antijam Capability				
LDR: (EIRP, dBW)				
Uplink: (Q-band)				

(b)(1)

[redacted]

10a. (U) Performance Characteristics (Cont'd):

Satellites

	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

Acronyms & Abbreviations

****

dBW - decibel Watts
EAM - Emergency Action Message
ECA - Earth Coverage Area
EIRP - Effective Isotropic Radiated Power
Kbps - Kilo bits per second LDR - Low Data Rate
LDR - Low Data Rate
LSA - Local Service Area
Mbps - Mega bits per second
MCE - Mission Control Element
MDR - Medium Data Rate
MIL-STD 1582C - Military Standard (Milstar Waveform)
MJCS - Joint Chiefs of Staff Memo
MMD - Mean Mission Duration
MSA - Medium Service Area
MTBCF - Mean Time Between Critical Failure
MTTRF - Mean Time To Restore Function
NCGS - Nuclear Criteria Group Secretariat
PCMR - Probability of Correct Message Receipt
R&M - Reliability and Maintainability
SCT - Single Channel Transponder
WSA - Wide Service Area

b. (U) Previous Change Explanations --

None. This is the initial Selected Acquisition Report.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

10d. (U) Performance Characteristics (Cont'd):
CP Terminals

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				
R&M				
MTBCF (hrs)	175	175 / 175	175	175
MTTRF (hrs)	1.0	1.0 / 1.0	1.0	1.0

b. (U) Previous Change Explanations --

None. This is the initial Selected Acquisition Report.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
Satellites

(b)(1)

[redacted]

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

11a. (b)(1)

(b)(1)

[redacted]

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 28 October 1992.

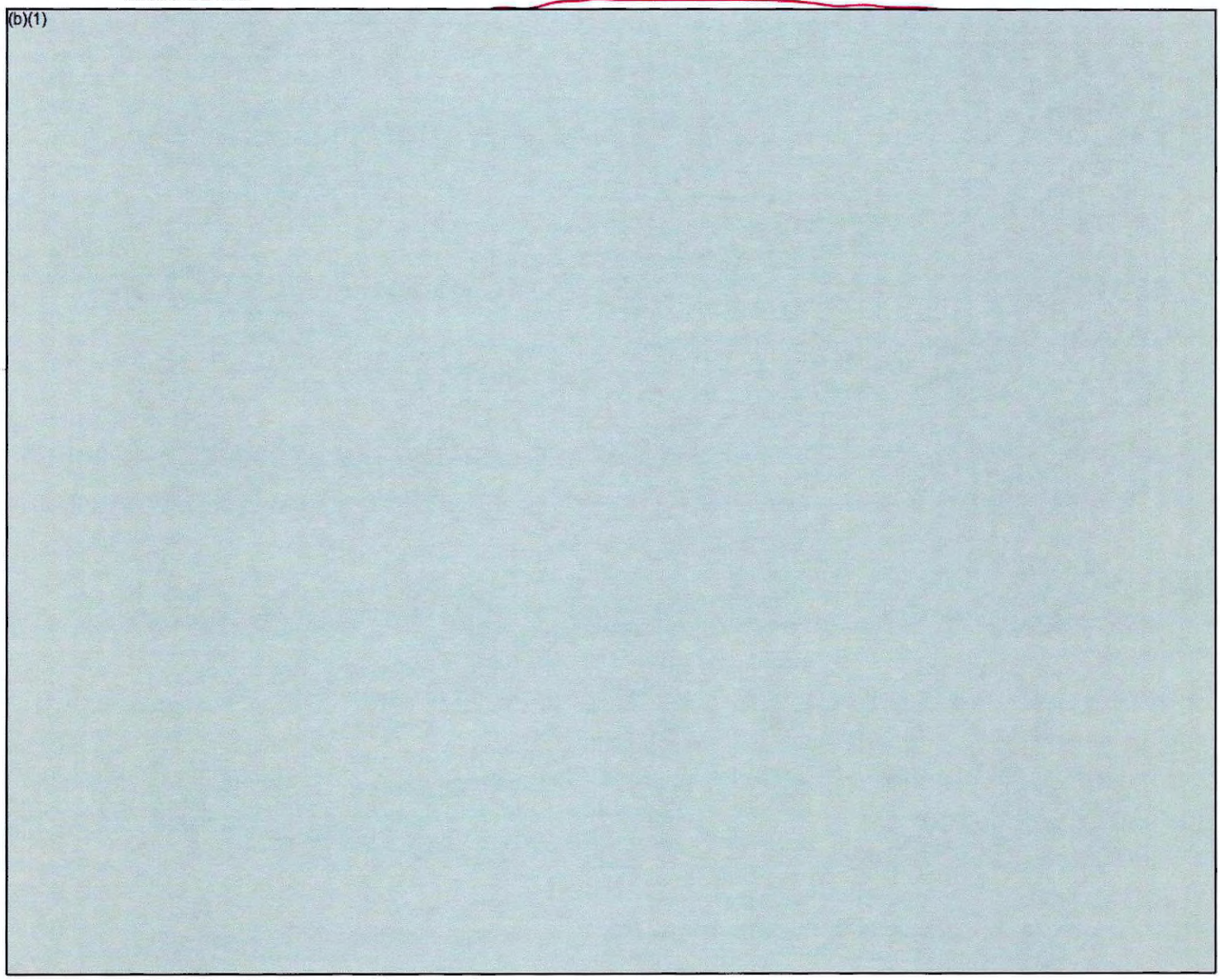
12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

Satellites

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
(b)(1)			

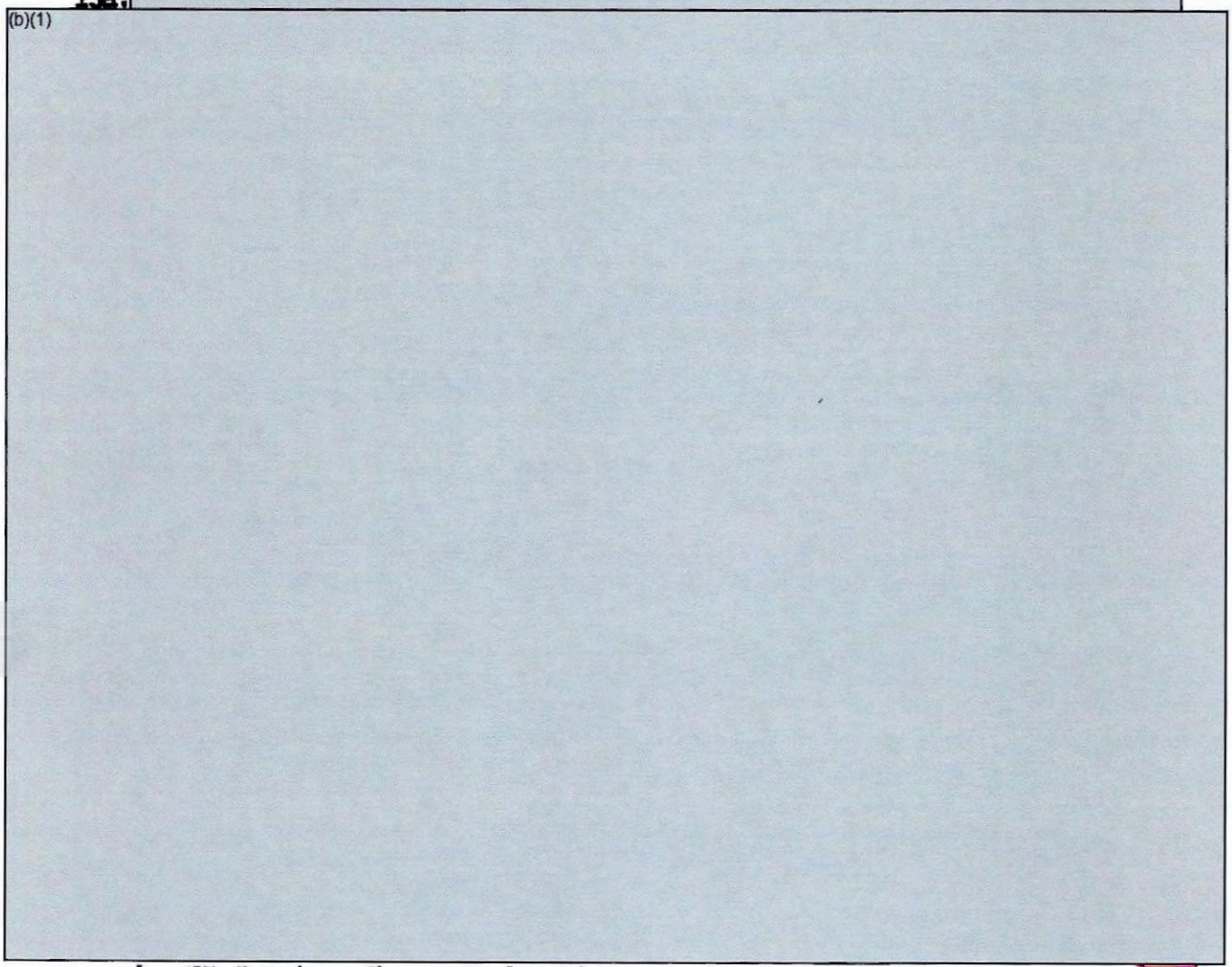
13. (U) Cost Variance Analysis:
Satellites

(b)(1)



13a. (b)(1)

(b)(1)



b. (U) Previous Change Explanations --

c. (U) Current Change Explanations --

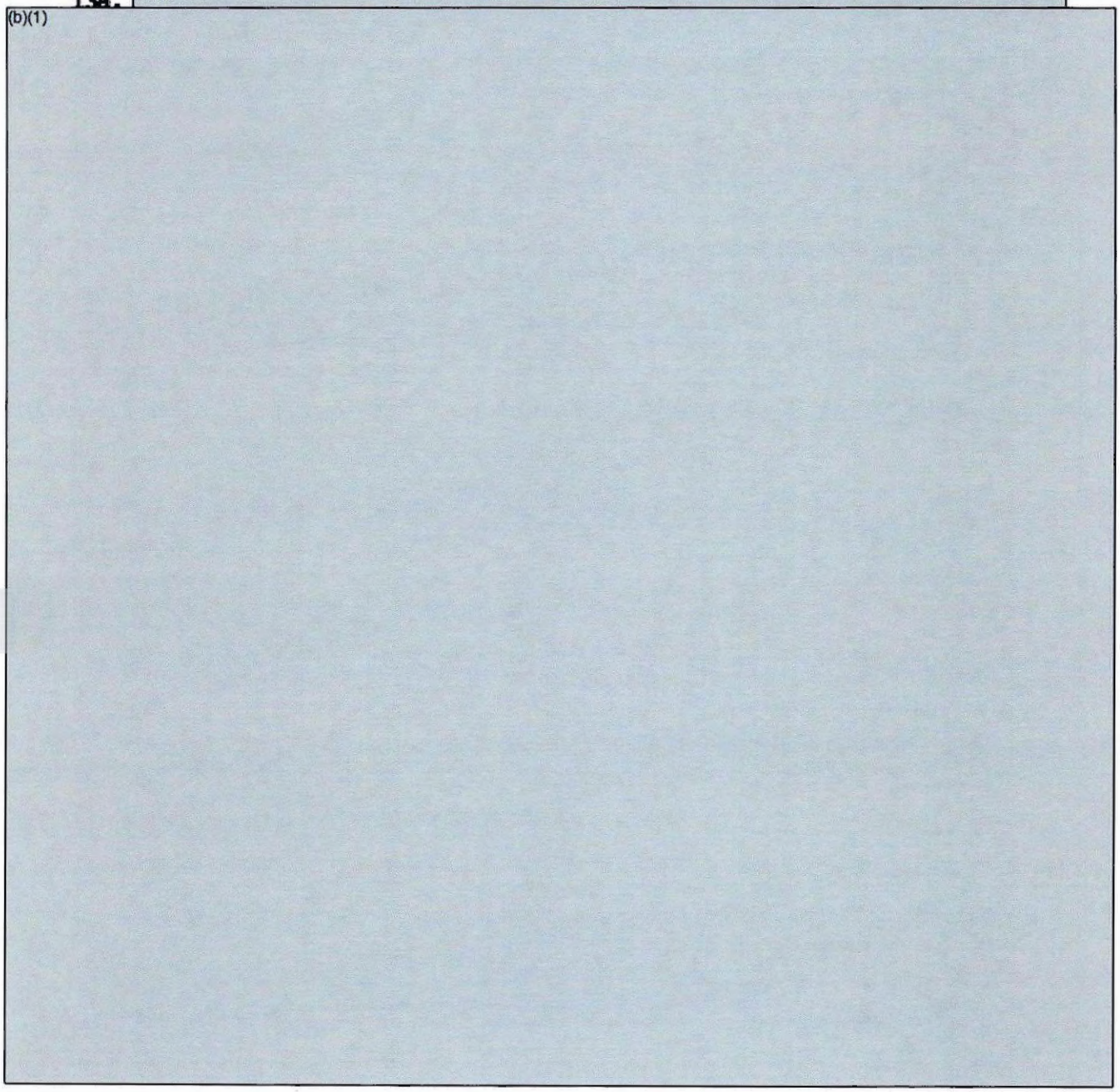
	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	--	-477.2
Congressionally directed reductions in funding (Estimating)	-157.0	-180.0

13c. (U) Cost Variance Analysis (Cont'd):
Satellites

	(Dollars in Millions) Base-Year	Then-Year
Reprogramming delaying the delivery of DFS-4 (Estimating)	-382.0	-431.3
RDT&E Subtotal	-539.0	-1088.5
(2) Procurement		
Revised escalation indices (Economic)	—	-782.8
Reallocation of funding from MILSTAR to DSCS (Estimating)	-81.8	-103.9
Procurement Subtotal	-81.8	-886.7

13a. (b)(1)

(b)(1)



MILSTAR, December 31, 1992

13a. (b)(1)

(b)(1)

[redacted]

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	--	-22.8

13c. (U) Cost Variance Analysis (Cont'd):
CP Terminals

	(Dollars in Millions) Base-Year	Then-Year
Change in command post terminal requirements which allows CPT to process at a medium data rate (Estimating)	+176.9	+246.7
RDT&E Subtotal	+176.9	+223.9
(2) Procurement		
Revised escalation indices (Economic)	--	-8.3
Reduction of 3 Navy Terminals, from 11 to 8 terminals. (Quantity)	-24.0	-29.5
Reduction of 5 Air Force CP Terminals from 93 to 88 terminals. (Quantity)	-61.3	-68.8
Adjustment for current & prior inflation (Support)	--	-0.5
Revised estimate for terminal segment (Estimating)	+6.7	+9.8
Procurement Subtotal	-78.6	-97.3
(3) MILCON		
Revised escalation indices (Economic)	--	-0.5
Revised number of permanent bases to two. (Estimating)	-12.7	-15.0
MILCON Subtotal	-12.7	-15.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

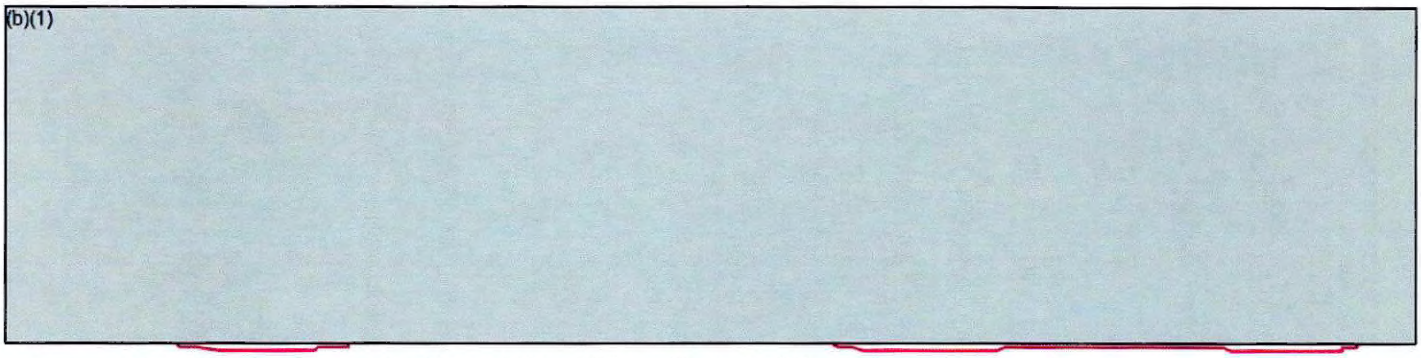
Satellites

(b)(1) [redacted]

MILSTAR, December 31, 1992

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

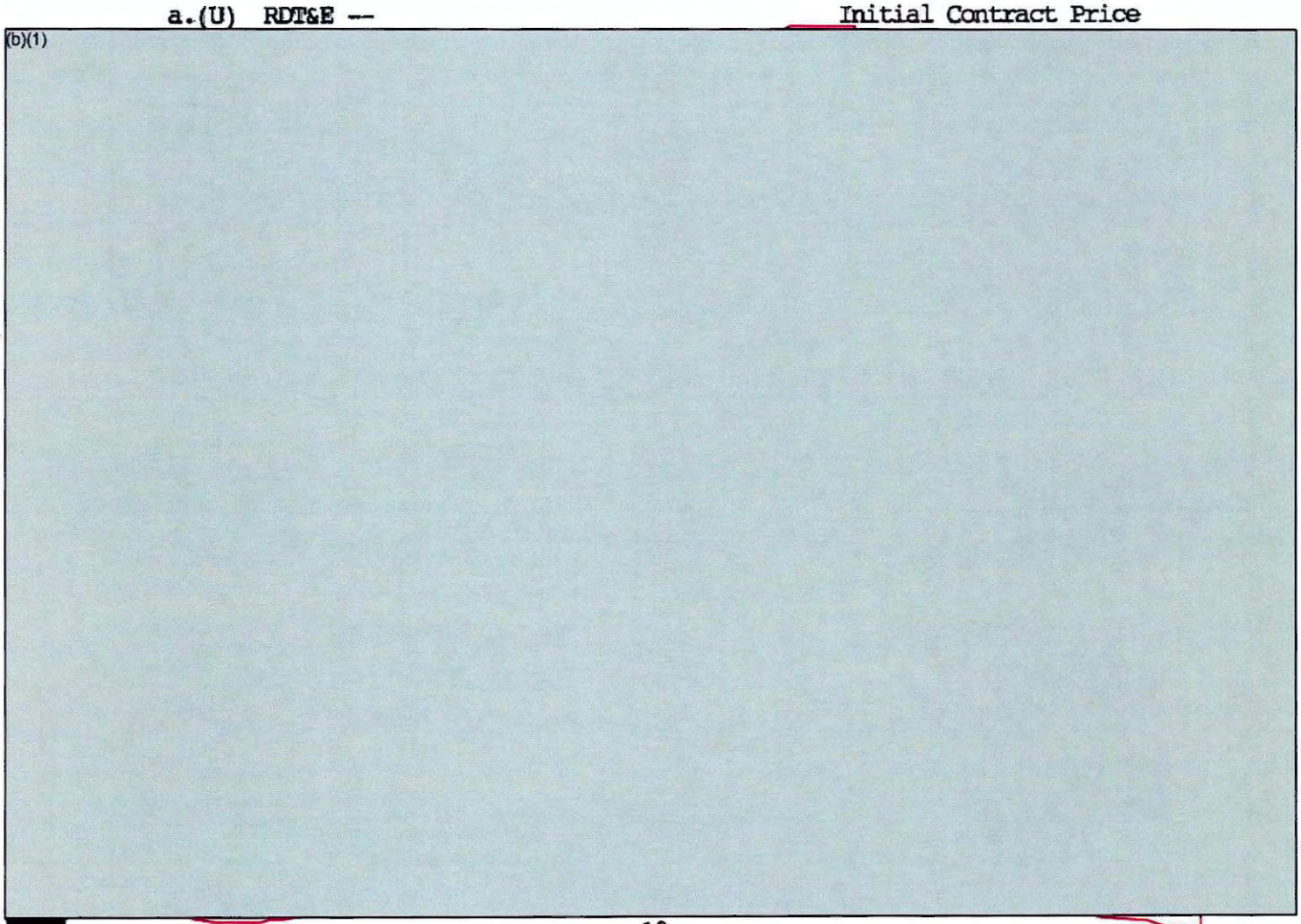
(b)(1)



15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E -- Initial Contract Price

(b)(1)



(b)(1)

15. (U) Contract Information (Cont'd):
continue with declines in contractor business base. Because of the potential for future rate impacts, Program Office estimated variance at completion is slightly lower at $8.5M.

This contract is over 90% complete and will not be shown in future SARs.

b.(U) Procurement --

(U) CP Production Terminals:	Initial Contract Price Target	Ceiling	Qty
Rockwell Intl Corporation, Richardson, TX			
F19628-89-C-0130, FPIF	$193.5	$207.2	12
Award: September 25, 1989			
Definitized: December 22, 1989			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$292.2	$313.2	21	$292.2	$302.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (04/26/93)	$-7.7	$-12.7
Net Change	$-7.7	$-12.7

Explanation of Change:

Cost Variance: The cumulative cost variance was due to material overruns and a general and administrative rate increase.

Schedule Variance: The cumulative schedule variance was due to late vendor deliveries caused by open physical configuration audit action items and radiation lot acceptance testing procedure disapproval. The factory test equipment schedule was delayed by line replaceable unit building delays and late hardware deliveries.

Program Impact: The current program cost and schedule variance reflects a potential overrun. Critical major subcontractors and vendor hardware delivery delays, along with increased engineering and procurement support impacted the first terminal contractor to government delivery. The delayed government delivery has become a critical milestone for contractor schedule recovery and for the prevention of future delivery delays on the remaining terminals. Substantial milestones have been completed and the terminal delivery delays are being corrected.

15. (U) Contract Information (Cont'd):

(U) CP Production Terminals:	Initial Contract Price Target	Ceiling	Qty
Raytheon Company, Marlborough, MA F19628-89-C-0131, FPIF Award: September 26, 1989 Definitized: March 30, 1990	$231.2	$249.0	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$369.5	$397.4	22	$311.4	$335.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date (04/26/93)	$-0.9	$-13.1
Net Change	$-0.9	$-13.1

Explanation of Change:

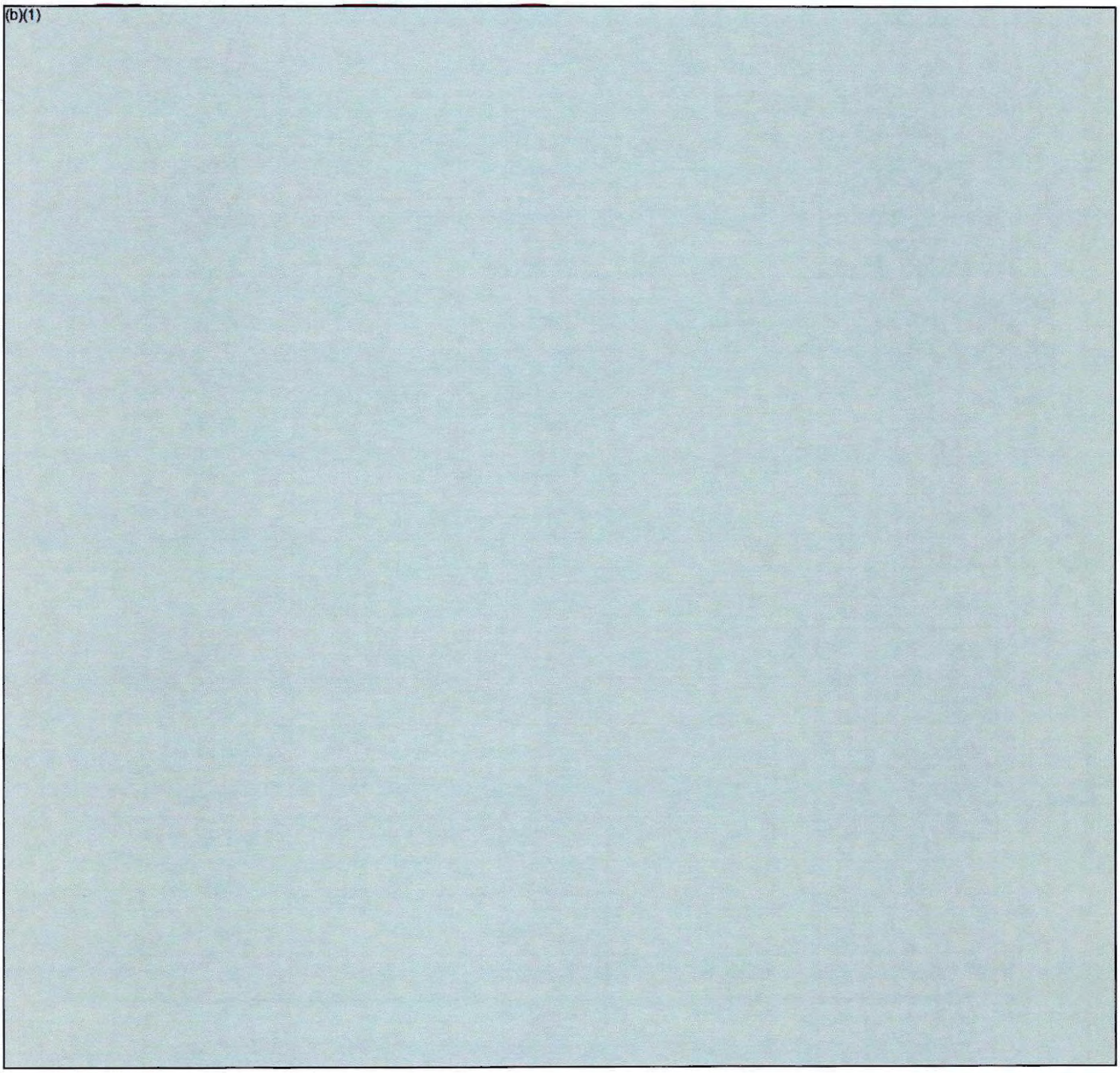
Cost Variance: The cumulative negative cost variance was due to line replaceable unit (LRU) thermal test failures which required additional manufacturing and subcontract management support efforts. The environmental stress rescreening costs are higher than anticipated.

Schedule Variance: The negative cumulative schedule variance is due to final paint, packaging, & DD250 acceptance process being longer than anticipated. Also, some line replaceable units were damaged in Reliability Qualification Testing which required repairs. Contract modifications to break out radome and spare linkage requirements from terminal delivery caused some delays. Finally, terminal Reliability Qualification Testing failures required engineering change orders and design modifications.

Program Impact: The current program cost and schedule variance reflects a potential overrun. Critical major subcontractor and vendor hardware delivery delays, along with increased engineering and procurement support impacted the first terminal contractor to government delivery. The delayed government delivery has become a critical milestone for contractor schedule recovery and for the prevention of future delivery delays on the remaining terminals. Substantial milestones have been completed.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

(b)(1)



16c. (U) Program Funding Summary (Cont'd):
Satellites

c. (U) Annual Summary -- Satellites

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 3600 Research, Development, Test + Eval, AF								
(b)(1)								
1993				985.0	1100.3	595.7	171.1	2.4
1994				703.3	803.9			2.4
1995				649.2	758.9			2.3
1996				596.5	713.4			2.3
1997				676.8	827.1			2.2
1998				541.1	675.8			2.2
1999				613.4	782.7			2.2
2000				480.1	626.1			2.2
2001				363.9	485.1			2.2
2002				355.4	484.1			2.2
2003				198.6	276.4			2.2
2004				38.8	55.2			2.2
2005				34.0	49.5			2.2
2006				33.0	49.0			2.2
2007				28.7	43.6			2.2

16c. (U) Program Funding Summary (Cont'd):
Satellites

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
2008				24.4	37.8			2.2
2009				20.0	31.8			2.2
2010				15.7	25.5			2.2
2011				12.5	20.7			2.2
Subtot	7			(b)(1)				

Obligation and expenditure data reflect program office information as of 31 Mar 93.

Appropriation: 3020 Missile Procurement, Air Force

1999				47.4	61.9			2.2
2000	1		903.5	856.1	1142.9			2.2
2001				100.4	136.9			2.2
2002	1		841.5	741.1	1033.1			2.2
2003				103.9	148.1			2.2
2004	1		1070.1	966.2	1406.8			2.2
2005	1		1017.0	995.0	1480.5			2.2
2006				0.3	0.5			2.2
2007				0.8	1.3			2.2

16c. (U) Program Funding Summary (Cont'd):
Satellites

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3020 Missile Procurement, Air Force (Cont'd)								
2008				1.3	2.1			2.2
2009				1.7	2.8			2.2
2010				2.2	3.6			2.2
2011				15.7	26.7			2.2
Subtot	4		3832.1	3832.1	5447.2			

Obligation and Expenditure data reflect program office information as of 31 Mar 93.

Appropriation: 3080 Other Procurement, Air Force

1993				15.4	17.7			2.4
1994				32.1	37.7			2.4
Subtot				47.5	55.4			
Grand Total	11		(b)(1)					

Obligation and expenditure data reflect program office information as of 31 Mar 93.

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

c. (U) Annual Summary -- CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1506 Aircraft Procurement, Navy								
1992	8		15.5	28.3	32.6			2.8
Subtot	8		15.5	28.3	32.6			
Navy	8		15.5	28.3	32.6			

Obligation and expenditure data reflect program office information as of 31 Mar 93

Appropriation: 3600 Research, Development, Test + Eval, AF

1991				(b)(1)				
1992								
1993				124.9	139.5	52.7	7.3	2.4
1994				102.2	116.8			2.4
1995				54.3	63.5			2.3
1996				41.0	49.0			2.3
1997				26.1	31.9			2.2
1998				25.9	32.3			2.2
1999				27.5	35.1			2.2
2000				9.7	12.7			2.2

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)								
2001				7.9	10.5			2.2
2002				7.9	10.8			2.2
2003				5.7	8.0			2.2
2004				5.8	8.2			2.2
2005				5.7	8.3			2.2
2006				5.7	8.5			2.2
2007				5.8	8.8			2.2
2008				5.9	9.1			2.2
2009				5.9	9.3			2.2
2010				5.9	9.6			2.2
2011				6.0	9.9			2.2
Subtot	27				(b)(1)			

Obligation and expenditure data reflects program office information as of 31 Mar 93.

Appropriation: 3010 Aircraft Procurement, Air Force								
1983				0.6	0.5	0.5	0.5	9.0
1984								8.0

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)								
1985				10.8	9.6	9.6	9.6	3.4
1986				20.5	18.9	18.9	18.9	2.7
1987	3	3.7	45.3	66.2	63.6	53.6	27.3	2.7
1988	1		8.4	9.1	9.2	8.7	4.9	3.0
1989	4		24.7	42.3	44.1	33.7	24.6	4.2
1990	3	0.6	17.0	42.5	45.6	19.9	7.0	4.0
1991	3	1.9	22.5	29.0	32.5	22.0		4.3
1992								2.8
1993	1		2.6	14.9	17.2			2.4
1994				10.1	12.2			2.4
Subtot	15	6.2	120.5	246.0	253.4	166.9	92.8	

FY 83-86 funding reflects the Dual Modem and ARC 171 A/H Radio Upgrades.

Obligation and expenditure data reflects program office information as of 31 Mar 93.

Appropriation: 3080 Other Procurement, Air Force

1983				1.2	1.0	1.0	1.0	4.9
1984								3.8

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 3080 Other Procurement, Air Force (Cont'd)								
1985				12.4	11.0	11.0	11.0	3.5
1986								2.8
1987								2.7
1988								3.0
1989	7		39.1	91.5	94.5	89.4	19.5	4.2
1990	8		48.5	73.1	77.9	73.1	16.1	4.0
1991	15		113.5	164.4	179.2			4.3
1992	34		80.9	223.5	251.0	26.0	2.3	2.8
1993	9		27.7	105.2	121.0	0.2		2.4
1994				38.5	45.3			2.4
1995								2.3
1996				4.1	5.0			2.3
1997				6.4	8.0			2.2
1998				10.9	14.0			2.2
1999				1.5	2.0			2.2
Subtot	73		309.7	732.7	809.9	200.7	49.9	

FY 83-86 funding reflects the Dual Modem and ARC 171 A/H Radio Upgrades.

16c. (U) Program Funding Summary (Cont'd):

CP Terminals

Obligation and expenditure data reflects program office information as of 31 Mar 93.

Appropriation: 3300 Military Construction, Air Force

1989				4.9	5.0	5.0	5.0	4.2
1990				0.3	0.3	0.3	0.3	4.0
1991				1.9	2.1	2.1	2.1	4.3
1992				11.2	12.4	10.2	8.8	2.8
1993								2.4
1994				2.6	3.0			2.4
1995				0.7	0.8			2.3
1996				1.5	1.8			2.3
Subtot				23.1	25.4	17.6	16.2	

(b)(1) [redacted]

Obligation and expenditure data reflects program office information as of 31 Mar 93.

17. (U) Production Rate Data:

Satellites

a. (U) Production Baseline Rate

Since production is less than six or more in any two fiscal years, production information is not required.

17b. (U) Production Rate Data (Cont'd):
Satellites

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		37.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		5447.2		N/A	N/A

Since production is less than six or more in any two fiscal years, production information is not required.

c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	7/1
Procurement	4/0

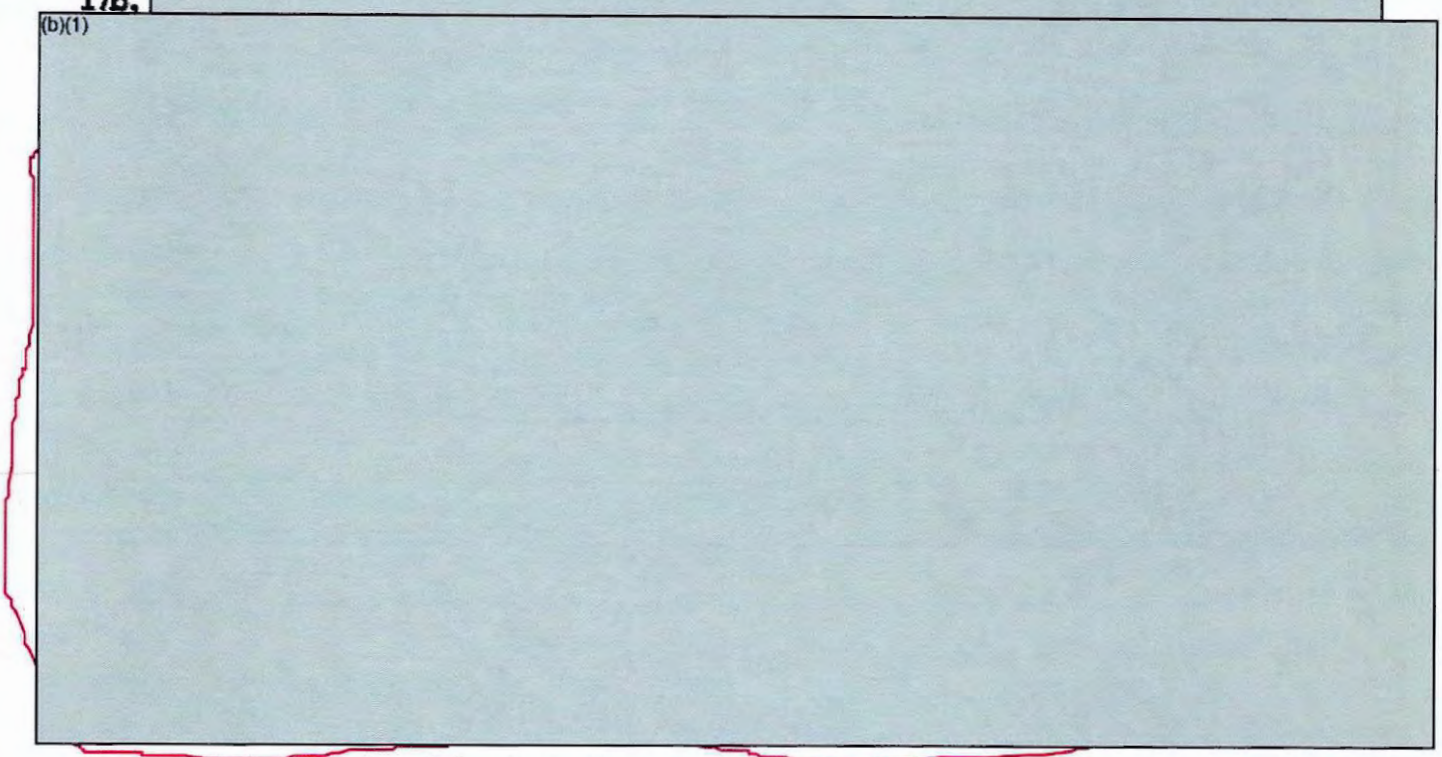
d. (U) Approved Design-to-Cost Objective -- N/A.

CP Terminals

a. (U) Production Baseline Rate

No steady state production rate was approved.

17b. (b)(1)



c. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	23/15
Procurement	0/0

d. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
Satellites

a. (U) Assumptions and Ground Rules --

The Operating & Support (O & S) period covers phase-in to Full Operation Capability (FOC) FY92-99 plus 12 steady state years. This estimate covers the cost of 12 Satellite Mission Control Subsystems in a steady-state condition. The maintenance concept consists of two levels for hardware and three levels for software.

18b. (U) Operating and Support Costs (Cont'd):
Satellites

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Constellation	Avg Annual Cost Per Antecedent
Mission Personnel	17.9	N/A
Unit Level Consumption	2.9	N/A
Depot Maintenance	0.1	N/A
Contractor Support	9.5	N/A
Total	30.4	N/A

c. (U) Contractor Support Costs -- None.

CP Terminals

a. (U) Assumptions and Ground Rules --

Operational requirements are 12 hours per mission for airborne force element terminals, 16 hours per mission for airborne command post terminals, 24 hours per day for fixed ground terminals, and 12 hours per day for transportable ground terminals. These costs assume 5 years ramp-up and 15 years of steady state operations. The maintenance concept for the command post terminals is 3-level for airborne and SAC ground terminals and 2-level for ground based terminals.

18b. (U) Operating and Support Costs (Cont'd):
CP Terminals

b. (U) Costs — (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Terminal	Avg Annual Cost Per Antecedent
Mission Personnel	0.1	N/A
Unit Level Consumption	0.1	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.0	N/A
Indirect Support	0.0	N/A
Total	0.2	N/A

c. (U) Contractor Support Costs -- None.

N-5 AOE 6

12-106

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AOE 6 SUPPORT SHIP

AS OF DATE: December 31, 1992

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ok with redaction below.

1. **Designation and Nomenclature (Preferred Name)**:
AOE 6 CLASS FAST COMBAT SUPPORT SHIP

2. **DoD Component**: Navy

3. **Responsible Office and Telephone Number**:
Naval Sea Systems Command (PMS383)
Zachary Taylor Building (NC#3)
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

CAPT Theodore Doroshenk, USN
Assigned: August 2, 1991
AV 332-3507 COMM (703) 602-3507

4. **Program Elements/Procurement Line Items**:

RDT&E:
PE 0603564N Project 0408 (Shared)
PE 0604567N Project 0857 (Shared), 1803 (Shared)
PROCUREMENT:
APPN 1611 ICN 5030 (Navy)
MILCON:
PE 0204441N, 0204796N, 0702096N, 0702228N
O & M:
PE 070801N

No Security Objection to Open Publication AS AMENDED
93-C-0411
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Dept. of the Navy

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5. **Related Programs**:

T-AO 187 CLASS FLEET OILER

MAY 26 1993 22

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

OASD(PA) DFOISR 93-C-0645

6. **Mission and Description:**

MISSION. The Fast Combat Support Ship operates as an integral part of the Carrier Battle Group providing simultaneous multiproduct underway replenishment by means of connected replenishment (CONREP) and vertical replenishment (VERTREP) using embarked helicopters. The ship delivers on-station munitions, bulk petroleum/oil/lubricants products, and fresh, frozen, and dry provisions to the Carrier Battle Group underway in hostile environments. The ship delivers and receives fleet freight, mail, and personnel to/from combatant forces underway. The ship will be capable of replenishing from six stations simultaneously.

DESCRIPTION. A 156,000 barrel cargo fuel capacity, twin screw, 20+ knots sustained speed, gas turbine geared drive ship, 753'8" in overall length, 107'0" in beam, and with a draft of 38'3". The ship will have the design capacity for 1800 long tons of ammunition, 400 long tons of Chill and Freeze Storage, 250 long tons of other cargo stowage, two H-46 VERTREP helicopters, and will have accommodations for 667 crew and detachment personnel, plus 38 transient personnel.

7. **Program Highlights:**

a. Significant Historical Developments --

The AOE 6 Class Program was approved by a NDCP on 20 MAR 86. The lead ship contract for detail design and construction was awarded to National Steel and Shipbuilding Company (NASSCO) on 23 JAN 87. The award was a one plus three option-type, fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option for the first follow ship (AOE 7) was awarded on 3 NOV 88 and for the second (AOE 8), on 6 DEC 89. The third option was not exercised; the funds were rescinded.

As a result of the FY 1992/1993 Congressional Budget of FEB 91, the FY 91 ship (AOE 9) was rescinded and a FY 93 ship (AOE 10) was added. A fifth ship (AOE 11) was added to the FYDP in FY 99; a sixth ship (AOE 12) was added in the outyears.

In MAY 91, the AOE 6 Class Program was provided $237.0M to complete the three ships under contract at NASSCO in the FY 91 Dire Emergency Supplemental Appropriations Act. These funds were necessary to cover cost growth and claims associated with shipbuilder overruns. The program experienced a resulting 30 percent Program Acquisition Unit Cost increase necessitating a Nunn-McCurdy Unit Cost Breach Report. On 12 DEC 91, USD(A) certified the AOE 6 program to Congress.

NASSCO submitted certified claims in the amount of $460.0M. A settlement modification was executed on 26 DEC 91 for $239.0M and was executed within available funding. The majority of claims entitlement was due to the late delivery of Government furnished RRGs resulting in loss of learning, inefficiencies due to larger required workforce,

7a. Program Highlights (Cont'd):

and the interruption of its planned utilization of advanced shipbuilding technology.

b. Significant Developments Since Last Report --
NASSCO's general labor strike ended 25 OCT 92, after the unions and management signed a return to work agreement. Only very limited production progress occurred during the 25 day strike period.

NASSCO's production labor personnel continue to work without a union agreement. Federal mediators recently brought both parties back to the bargaining table to resume negotiations.

This system will satisfy mission requirements.

c. Changes Since As Of Date --
The contract for design and construction of the AOE 10 was awarded to NASSCO on 15 JAN 93. The option to build the AOE 10 RRGs was exercised with Cincinnati Gear Co. on 15 JAN 93.

AOE 6 went to sea in FEB 93 for Propulsion Trials. All trial objectives were achieved, including attainment of design full power torque and successful operability of RRGs.

AOE 7 RRGs were delivered on 18 JAN 93. RRG installations are on schedule.

Contract delivery dates (CDDs) for AOE 6, 7, and 8 were revised by a contract modification on 30 MAR 93. The new CDDs for AOE 6, 7, and 8 are 29 OCT 93 vice 1 APR 93, 24 MAY 94 vice 25 JAN 94, and 7 FEB 95 vice 25 AUG 94, respectively.

On 8 APR 93, ASN(RD&A) approved a Baseline Change Request (BCR) which reflects the current estimate of this SAR.

8. Threshold Breaches:
There are no breaches to the Approved Program Baseline (APB) dated 8 APR 93 and no Nunn-McCurdy unit cost breaches.

9. **Schedule**:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Operational Requirement (OR)	JUL 82	JUL 82	JUL 82
Ship Characteristics Imp. Board (SCIB)	JUL 83	JUL 83	JUL 83
Characteristics Approved	OCT 84	OCT 84	OCT 84
Production Decision	MAR 86	MAR 86	MAR 86
Production Contract Award	JAN 87	JAN 87	JAN 87
Production Started - 1st Ship	JUN 88	JUN 88	JUN 88
Follow-On Production Decision	NOV 88	NOV 88	NOV 88
Exercise Option (AOE 7)	N/A	NOV 88	NOV 88
Exercise Option (AOE 8)	N/A	DEC 89	DEC 89
Launch - 1st Ship	FEB 90	OCT 90	OCT 90
Acceptance Trials - 1st Ship	MAR 91	AUG 93	AUG 93 (Ch-1)
Delivery - 1st Ship	APR 91	OCT 93	OCT 93 (Ch-2)
Organic Support Capability Date	N/A	NOV 94	NOV 94
Service Depot Support Date	N/A	NOV 94	NOV 94
Initial Operational Capability	AUG 91	FEB 95	FEB 95 (Ch-3)
Last AOE Delivery	FEB 98	DEC 04	OCT 04 (Ch-4)

b. Previous Change Explanations --

ACCEPTANCE TRIALS - 1ST SHIP: The delay from JUL 91 to SEP 91 was due to a delay in launch, late receipt of main reduction gear, and concurrent propulsion testing. The delay from SEP 91 to JUN 92 was due to NASSCO production inefficiencies and late delivery of Reversing Reduction Gears (RRG). The delay from JUN 92 to DEC 92 was due to NASSCO production inefficiencies and late delivery of RRG. The delay from DEC 92 to FEB 93 was due to continued NASSCO production inefficiencies and reprogramming resulting from claims settlement.

DELIVERY - 1ST SHIP: The delay from AUG 91 to NOV 91 was due to the delay in Acceptance Trials. The delay from NOV 91 to SEP 92 was due to NASSCO production inefficiencies and late delivery of RRG. The delay from SEP 92 to FEB 93 was due to the delay in Acceptance Trials. The delay from FEB 93 to APR 93 was due to NASSCO production inefficiencies and reprogramming resulting from late receipt of RRG, which led to an extension of the contract delivery date as a part of claims settlement.

INITIAL OPERATIONAL CAPABILITY: The delay from NOV 91 to JAN 92 was due to the change in fitting out period caused by delay in delivery. The delay from JAN 92 to OCT 92 was due to delay in delivery of first ship. The delay from OCT 92 to APR 93 was due to the change in fitting out period caused by delay in delivery. The delay from APR 93 to MAY 93 was due to the change in fitting out period caused by change in delivery.

9b. **Schedule (Cont'd)**:

LAST AOE DELIVERY: The delay from FEB 98 to APR 99 was due to large lot buy-out in FY 93. The change from APR 99 to NOV 96 was due to the reduction of production from seven to four ships. The delay from NOV 96 to APR 97 was due to the delay in anticipated contract award.

c. Current Change Explanations --

(Ch-1) ACCEPTANCE TRIALS - 1ST SHIP: The delay from FEB 93 to AUG 93 is due to the 25-day general labor strike and the status of remaining production and engineering work.

(Ch-2) DELIVERY - 1ST SHIP: The delay from APR 93 to OCT 93 is due to the delay in Acceptance Trials.

(Ch-3) INITIAL OPERATIONAL CAPABILITY: The delay from MAY 93 to FEB 95 is due to the delay in delivery of AOE 6.

(Ch-4) LAST AOE DELIVERY: The delay from APR 97 to OCT 04 is due to the addition of a sixth ship in the outyears.

d. References --

Production Estimate:
NDCP Approved 20 March 1986: Lead Ship Production

DCP Approved 25 May 1989: Follow Ship Production

Approved Program:
NAE Approved Acquisition Program Baseline dated 08 April 1993.

10. **Performance Characteristics**:

a. Performance --

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Length Overall (ft)	753'8"	753'8"	/ 753'8"	753'8"	753'8"
Beam (maximum) (ft)	107'0	107'0"	/ 107'0"	107'0"	107'0"
Draft (mean) (ft)	37'9"	38'3"	/ 38'3"	38'3"	38'3"
Displacement (long tons)	48500	48998	/ 48998	48998	48998
Propulsion					
Gas Turbines	4	4	/ 4	4	4
Shafts	2	2	/ 2	2	2
Shaft Horsepower	100000	100000	/ 100000	100000	100000
Accommodations	667	667	/ 667	667	667
Speed (kts)	20+	20+	/ 20+	-	20+

AOE 6 SUPPORT SHIP, December 31, 1992

10a. **Performance Characteristics (Cont'd)**:

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Armament					
NSSMS	1	1	/ 1	1	1
CIWS	2	2	/ 2	2	2
25mm Guns	2	2	/ 2	2	2
.50 Cal Guns	4	4	/ 4	4	4
Cargo Fuel Cap. (bbls)	156000	156000	/ 156000	156000	156000
DFM-JP5-Conv. (%)	30-40-30	30-40-30	/ 30-40-30	30-40-30	30-40-30
Ordnance Storage (long tons)	1800	1800	/ 1800	1800	1800
Chill & Freeze (long tons)	400	400	/ 400	400	400
Other Cargo (long tons)	250	250	/ 250	250	250
H-46 Helo (UNREP)	2	2	/ 2	2	2

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:
NDCP Approved 20 March 1986: Lead Ship Production

DCP Approved 25 May 1989: Follow Ship Production

Approved Program:
NAE Approved Acquisition Program Baseline dated 08 April 1993.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	29.4	35.2	35.5
Procurement	2303.1	2859.8	2859.8
Ship Construction	(2230.6)		(2859.8)
OF/PD	(72.5)		(0.0)
Total Sailaway	(2303.1)		(2859.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	124.2	87.0
Ops. and Maint. (O&M)	0.0	N/A	0.4
Total FY 86 Base-Year $	2332.5	3019.2	2982.7
Escalation	502.3	734.7	704.6
Development (RDT&E)	(-0.6)	(1.3)	(1.4)
Procurement	(502.9)	(673.8)	(673.8)
Construction (MILCON)	(0.0)	(59.6)	(29.3)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.1)
Total Then-Year $	2834.8	3753.9	3687.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	7	6	6
Total	7	6	6

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
NDCP Approved 20 March 1986: Lead Ship Production

DCP Approved 25 May 1989: Follow Ship Production

Approved Program:
NAE Approved Acquisition Program Baseline dated 08 April 1993.

12. **Program Acquisition/Current Procurement Unit Cost Summary**:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3687.3	2318.8	3687.3
(2) Quantity	6	4	6
(3) Unit Cost	614.55	579.70	614.55
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	323.7	323.7	10.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	323.7	323.7	10.7
(2) Quantity	1	1	0
(3) Unit Cost	323.70	323.70	N/A

13. **Cost Variance Analysis**:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	28.8	2806.0	0.0	0.0	2834.8
Previous Changes:					
Economic	-0.1	+52.2	-5.4	-	+46.7
Quantity	-	-1374.3	-	-	-1374.3
Schedule	-	+133.0	-	-	+133.0
Engineering	-	-	-	-	-
Estimating	+2.2	+529.4	+173.7	+0.5	+705.8
Other	-	-	-	-	-
Support	-	-27.2	-	-	-27.2
Subtotal	+2.1	-686.9	+168.3	+0.5	-516.0
Current Changes:					
Economic	+0.1	-47.6	-1.2	-	-48.7
Quantity	-	+995.9	-	-	+995.9
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+5.9	+532.8	-50.8	-	+487.9
Other	-	-	-	-	-
Support	-	-66.6	-	-	-66.6
Subtotal	+6.0	+1414.5	-52.0	-	+1368.5
Total Changes	+8.1	+727.6	+116.3	+0.5	+852.5
Current Estimate	36.9	3533.6	116.3	0.5	3687.3

13a. **Cost Variance Analysis (Cont'd):**

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	29.4	2303.1	0.0	0.0	2332.5
Previous Changes:					
Quantity	-	-979.0	-	-	-979.0
Schedule	-	+100.1	-	-	+100.1
Engineering	-	-	-	-	-
Estimating	+1.8	+412.8	+123.7	+0.4	+538.7
Other	-	-	-	-	-
Support	-	-18.4	-	-	-18.4
Subtotal	+1.8	-484.5	+123.7	+0.4	-358.6
Current Changes:					
Quantity	-	+704.6	-	-	+704.6
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+4.3	+390.7	-36.7	-	+358.3
Other	-	-	-	-	-
Support	-	-54.1	-	-	-54.1
Subtotal	+4.3	+1041.2	-36.7	-	+1008.8
Total Changes	+6.1	+556.7	+87.0	+0.4	+650.2
Current Estimate	35.5	2859.8	87.0	0.4	2982.7

b. Previous Change Explanations --

RDT&E

Economic: Revised Economic Escalation Indices.

Estimating: Increase in Engineering Development Costs; Current and Prior Inflation Offset; Increase in Engineering Development costs for AOE 10 ship contract design.

Procurement

Economic: Revised Economic Escalation Indices.

Quantity: Change in program: 7 to 4 ships.

Schedule: Change in acquisition strategy: from 1-1-0 to 1-0-1 (FY90 to FY92).

Estimating: Repricing based on prior year ship costs; Current and Prior Inflation Offset; Congressional

13b. **Cost Variance Analysis (Cont'd)**:

reductions to FY 1992 program.

Support: Decrease in estimated Outfitting and Material costs; Increase in Outfitting Material Costs and Post Delivery Allowance for shock tests.

MILCON

Economic: Revised Economic Escalation Indices; Economic Adjustment for Negative Program Change.

Estimating: Addition of Homeport Requirements; Current and Prior Inflation Offset; Revised Homeport requirements estimate.

O & M

Estimating: MILCON Planning/Design and Site Survey Studies.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	+0.1
Revised estimate to complete contract design. (Estimating)	+4.3	+5.9
RDT&E Subtotal	+4.3	+6.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-47.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.2
Quantity Variance resulting from increase of 2 units. (Quantity)	+704.6	+995.9
Adjustment for Current & Prior Inflation. (Estimating)	+37.2	+43.5
Revised program estimates (Estimating)	+299.4	+422.7
Correction of Estimating and Support variances to reflect Outfitting and Post Delivery (OF/PD) as sailaway:		
Reclassification of Support variance to Estimating variance. (Estimating)	+54.1	+66.6

13c. **Cost Variance Analysis (Cont'd)**:

	(Dollars in Millions) Base-Year	Then-Year
Reclassification of Support variance to Estimating variance. (Support)	-54.1	-66.6
Procurement Subtotal	+1041.2	+1414.5
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	-3.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.6
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1
Revised Homeport requirements estimate. (Estimating)	-36.6	-50.7
MILCON Subtotal	-36.7	-52.0

14. **Program Acquisition Unit Cost (PAUC) History** (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
404.97	-0.33	4.43	22.17	--	198.95	--	-15.63	209.59	614.55

15. **Contract Information** (Then-Year Dollars in Millions):

a. Procurement --

AOE 6/7/8:
NASSCO, San Diego, CA
N00024-87-C-2002, FPI
Award: January 23, 1987
Definitized: January 23, 1987

Initial Contract Price Target	Ceiling	Qty
$281.5	$319.9	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$961.9	$1081.8	3	$1081.8	$1081.8

15. **Contract Information (Cont'd)**:

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-223.2	$-55.7
Cumulative Variances To Date (01/31/93)	$-38.8	$-18.9
Net Change	$184.4	$36.8

Explanation of Change:

COST and SCHEDULE variances are due to the impacts of NASSCO's general labor strike; poor efficiencies in design and production; and high levels of production rework.

(b)(4) [redacted]

Initial Contract Price

AOE 10:	Target	Ceiling	Qty
NASSCO, San Diego, CA N00024-93-C-2303, FPI Award: January 15, 1993 Definitized: January 15, 1993	$358.4	$414.3	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$358.4	$414.3	1	$358.4	$361.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	$0.0	$0.0

Explanation of Change: None.

NASSCO has not yet submitted a Cost Performance Report (CPR) for this contract. Lack of a CPR precludes variance calculations.

16. **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 63.2% (12 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 59.4% ($2189.5 / $3687.3)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2000)	Total
RDT&E	31.3	-	-	5.6	36.9
Procurement	2119.4	10.7	5.4	1398.1	3533.6
MILCON	38.3	-	49.0	29.0	116.3
O&M	0.5	-	-	-	0.5
Total	2189.5	10.7	54.4	1432.7	3687.3

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1982				2.7	2.4	2.4	2.4	7.6
1983				4.0	3.7	3.7	3.7	4.9
1984				7.9	7.6	7.6	7.6	3.8
1985				7.7	7.6	7.6	7.6	3.4
1986				4.5	4.6	4.6	4.6	2.8
1987				1.5	1.6	1.6	1.6	2.7
1988				0.1	0.1	0.1	0.1	3.0
1989								4.2
1990				1.2	1.4	1.2	1.2	4.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1991				1.6	1.9	1.9	1.9	4.3
1992				0.3	0.4	0.1	0.1	2.8
1993								2.4
1994								2.4
1995								2.3
1996				0.9	1.2			2.3
1997				1.7	2.4			2.2
1998				1.1	1.5			2.2
1999				0.3	0.5			2.2
Subtot				35.5	36.9	30.8	30.8	
Appropriation: 1611 Shipbuilding and Conversion, Navy								
1987	1		624.9	542.6	583.4	505.5	479.2	1.5
1988								2.3
1989	1		413.2	335.3	376.9	367.4	292.1	2.8
1990	1		415.5	338.7	388.5	372.4	288.6	1.3
1991				202.2	237.0	164.7	70.9	1.3
1992				175.1	209.9	195.1	3.3	1.7

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Total Then-Year $ Obligated	Total Then-Year $ Expended	Escl Rate (%)
Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)								
1993	1		423.2	264.0	323.7	227.3		2.4
1994				8.5	10.7			2.4
1995				4.2	5.4			2.3
1996				4.2	5.5			2.3
1997				6.6	8.9			2.2
1998				1.2	1.7			2.2
1999	1		487.1	474.1	663.0			2.2
2000	1		495.9	503.1	719.0			2.2
Subtot	6		2859.8	2859.8	3533.6	1832.4	1134.1	
Appropriation: 1205 Military Construction, Navy								
1991				16.1	20.0	2.4	1.7	4.3
1992				12.7	16.2	5.8		2.8
1993				1.6	2.1	0.7		2.4
1994								2.4
1995				35.9	49.0			2.3
1996				19.1	26.6			2.3
1997								2.2

AOE 6 SUPPORT SHIP, December 31, 1992

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Base Year$	Total Then-Year $ Program	Obligated	Expended	Escl Rate (%)

Appropriation: 1205 Military Construction, Navy (Cont'd)

1998				1.4	2.1			2.2
1999				0.2	0.3			2.2
Subtot				87.0	116.3	8.9	1.7	

Appropriation: 1804 Operation and Maintenance, Navy

1990				0.4	0.5	0.5	0.5	4.0
Subtot				0.4	0.5	0.5	0.5	
Grand Total	6		2859.8	2982.7	3687.3	1872.6	1167.1	

17. Production Rate Data:

a. Production Baseline Rate

This section is not required for this program. The production rate is less than 6 items per year.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		10.7		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost		5.4		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)		1398.1		N/A	N/A

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The AOE 6 Class Fast Combat Support Ship is designed to operate independently or as a unit of an underway replenishment group, furnishing petroleum/oil/lubricant products and fresh, frozen, and dry provisions to operating forces. The O&S costs associated with this ship class are based on a useful life of 30 years. Ship design parameters indicate that each ship will consume about 110,900 BBL of fuel each year.

Direct personnel costs involve the annual cost for the embarked crew. Retirement costs are not included in these direct personnel costs. Direct operating costs include the cost of fuel, repair parts, supplies, training, expended stores, and purchased services. Direct maintenance is based on the average annual costs of the AOE 1 Class (AOE 1-4) Intermediate and Depot Level Maintenance. Indirect costs include training, retirement costs, publications, ammunition handling, and engineering/technical services support. The baseline used to derive the estimates are an average of the FY92 Actuals, five-year maintenance cost averages, and the FY93 approved expenses.

AOE 6 SUPPORT SHIP, December 31, 1992

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AOE 6 Class	Avg Annual Cost Per AOE 1 Class
Direct Personnel	14.5	14.4
Direct Operations	6.3	7.6
Direct Maintenance	16.1	14.7
Indirect Costs	0.8	0.8
Total	37.7	37.5

c. Contractor Support Costs -- None.

A-18 LONGBOW APACHE

92-048

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: Longbow

AS OF DATE: December 31, 1992

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AS AMENDED
CLEARED
FOR OPEN PUBLICATION
JUN 01 1993 21
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

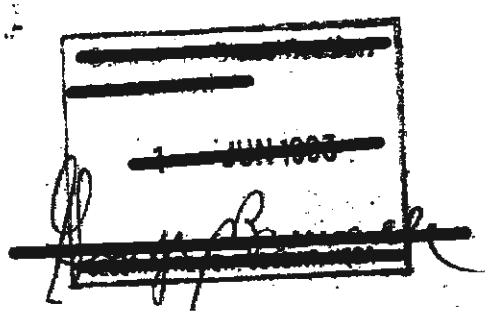
1. (U) Designation and Nomenclature (Preferred Name):
   Longbow Apache

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
   LONGBOW PROJECT MANAGER
   ATTN: SFAE-AV-LB
   4300 GOODFELLOW BLVD.
   ST. LOUIS, MO 63120-1798
   COL ROBERT C. ATWELL
   Assigned: August 19, 1991
   AV 693-1992 COMM (314) 263-1992

4. (U) Program Elements/Procurement Line Items:

   RDTE&E:
   PE 23744 Project D423
   PE 63776 Project D472
   PE 64816 Project DC27, DC31



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OASD(PA) DFOISR 93-C-736

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Longbow, December 31, 1992

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:
APPN 2031 ICN AA6607 (Army)
APPN 2031 ICN AA6608 (Army)
APPN 2031 ICN AA0978 (Army)

PE 23744 Project D423 was restructured as PE 64816 Project DC31.

5. (U) Related Programs:
AH-64 Apache, Hellfire Modular Missile System (HMMS), Longbow Hellfire, and RAH-66 Comanche.

6. (U) Mission and Description:
The Longbow consists of a mast-mounted Fire Control Radar (FCR), that will be integrated into the AH-64 airframe, and a Radio Frequency autonomous seeker in an upgraded Hellfire missile (Longbow Hellfire). Longbow will provide the AH-64 and RAH-66 a true fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable day or night in adverse weather and in obscurants. Hellfire must effectively engage and destroy advanced threat armor on the AirLand Battlefield of the late 1990's and into the next century. To be effective and survive on this future battlefield, the attack helicopter team must rapidly engage multiple targets with minimum exposure time, and deploy a system that is inherently resistant to threat countermeasures. The term Longbow AH-64D refers to the Longbow system (radar and associated components) integrated onto an AH-64 airframe. The AH-64C incorporates all of the Longbow improvements with the exceptions of the FCR and the 701-C engines.

7. (U) Program Highlights:
a. (U) Significant Historical Developments —
The Longbow program evolved from the Helicopter Adverse Weather Target Acquisition and Designation System (HAWTADS) activity initiated in 1978. Industry-wide interaction led to the initiation of the Helicopter Adverse Weather Fire Control and Acquisition Radar (HAWFCAR) program. Martin Marietta Corporation (MMC) and Westinghouse Electric Corporation (WEC) were awarded parallel competitive technology demonstration contracts for an RF FCR to be integrated and tested on the AH-64 Apache. In late 1981, a classified program was initiated to add an RF Seeker for Hellfire to the FCR yielding a total system approach for Apache. In 1982, WEC and MMC were awarded parallel competitive contracts for the first phase, Critical Technology Demonstration (CTD).

Following the August 1985 Milestone I In-Process Review (IPR), a Joint Venture (JV) contract was awarded in November 1985 to MMC and WEC for tactical Longbow preliminary design. The JV was formed to

Longbow, December 31, 1992

7a. (U) Program Highlights (Cont'd):

take advantage of the technical expertise in the companies and to ensure a competition option throughout the program. In August 1986, a Proof of Principle (POP) demonstration contract was awarded to the JV.

Concurrent with POP, the engineering development program was approved in the Army Acquisition Decision Memorandum (ADM), 20 July 1989. This decision authorized integration of the Longbow Fire Control Radar onto four AH-64 prototype airframes. A thirteen-month Initial Design Phase (IDP) contract was awarded to the JV, 28 September 1989.

Early User Test and Experimentation (EUTE) concluded the POP phase in April 1990. A Milestone II Defense Acquisition Board (DAB) reviewed the Longbow program on 5 December 1990. An ADM was signed by the DAE on 7 December 1990 approving the entry of Longbow into Full Scale Development (FSD).

The FCR FSD contract became effective 12 January 1991. The airframe program was replanned to the new 70-month schedule in June 1991 as a result of the DAB directive to align the FCR, airframe, and missile contract efforts.

b. (U) Significant Developments Since Last Report --
The Longbow prototype AH-64D aircraft, without the Fire Control Radar, successfully completed its first flight in April 1992 at the McDonnell Douglas Helicopter Company facilities in Mesa, AZ. The aircraft performed basic maneuvers (forward, sideward, and rearward flight; and hovering) for approximately 22 minutes. Ceremonies commemorating the first flight were held 14 May 1992.

Development Testing is scheduled to begin in July 1994; Initial Operational Test and Evaluation is scheduled to begin in January 1995.

The Longbow Apache system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
The new APB, signed 13 May 1993, provides approval for restructuring the Longbow Program to incorporate both the AH-64C and AH-64D models. The AH-64C contractual effort was initiated in September 1992 with the addition of two prototype development aircraft. The AH-64C model will not include the Fire Control Radar or the 701-C engine. With the submission of the FY 94 President's Budget, the AH-64C was added to the Longbow Apache development effort.

As of April 1993, two prototype aircraft have logged a total of more

7c. (U) **Program Highlights (Cont'd):**

than 250 flight hours.

8. (U) **Threshold Breaches:**
There are currently no Acquisition Program Baseline (13 May 1993) breaches. There is a program acquistion unit cost Nunn-McCurdy breach. Since the determination was not made in time to provide the required unit cost breach information in this SAR, it will be provided in section 12 (expanded) of the June 1993 SAR.

9. (U) **Schedule:**
AH-64D

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I In Process Review	AUG 85	AUG 85	AUG 85
Prelimin Design Contract Award	NOV 85	NOV 85	NOV 85
Contract Award (Proof of Principle)	AUG 86	AUG 86	AUG 86
LBA Phase I Contract Award	AUG 88	AUG 88	AUG 88
Milestone IB (DAB)	JUL 89	JUL 89	JUL 89
LBA Phase 2 Contract Award	AUG 89	AUG 89	AUG 89
IDP Contract Award	SEP 89	SEP 89	SEP 89
Dev Test/Early User Test and Eval			
Start	FEB 90	FEB 90	FEB 90
Complete	APR 90	APR 90	APR 90
Milestone II/IV (DAB)	DEC 90	DEC 90	DEC 90
Full Scale Development Contract Award	DEC 90	DEC 90	DEC 90
Verification of Apache Action Tm Fixes			
Start	SEP 91	SEP 91	APR 91
Complete	MAR 92	MAR 92	JUL 91
LBA Force Develop Test and Experimentation			
Start	APR 92	N/A	N/A
Complete	SEP 92	N/A	N/A
First Flight of Prototype w/o Longbow	APR 92	APR 92	APR 92
Prelim Airworthiness Eval			
Start	JAN 93	JAN 93	MAR 93(Ch-1)
Complete	MAR 93	MAR 93	JUN 93(Ch-1)
LBA Initial Prod Readiness Rev	JUL 92	JUL 92	JUL 92(Ch-2)
First Flight w/ Longbow	AUG 93	AUG 93	AUG 93
Component Qualification	DEC 93	DEC 93	DEC 93
LBA Long Lead IPR	JAN 94	OCT 94	OCT 94(Ch-1)
Long Lead Time Items Contract Award	APR 94	NOV 94	NOV 94(Ch-1)
Development Test			

9a. (U) Schedule (Cont'd):
AH-64D

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Start	JUL 94	JUL 94	JUL 94
Complete	SEP 94	SEP 94	SEP 94
Force Dev Test and Experimentation			
Start	OCT 94	OCT 94	OCT 94
Complete	NOV 94	NOV 94	NOV 94
Production Readiness Review	DEC 94	JUN 95	JUN 95(Ch-1)
Milestone IIIA (DAB)	MAR 95	NOV 95	NOV 95(Ch-1)
LRIP Contract Award (LBA & FCR)	APR 95	NOV 95	NOV 95(Ch-1)
IOT&E			
Start	JAN 95	JAN 95	JAN 95
Complete	MAR 95	MAR 95	MAR 95
Milestone IIIB (DAB)	OCT 96	OCT 97	OCT 97(Ch-1)
First Production Delivery (LBA & FCR)	APR 96	JUN 97	JUN 97(Ch-1)
Full Rate Production Contract Award (FCR)	NOV 96	NOV 97	NOV 97(Ch-1)
Full Rate Production Conversion Award (LBA)	NOV 96	NOV 97	NOV 97(Ch-1)
First Unit Equipped	FEB 97	OCT 97	OCT 97(Ch-1)
Organic Spt for Intermed Level of Repair	FEB 97	OCT 97	OCT 97(Ch-1)
IOC	APR 97	DEC 97	DEC 97(Ch-1)
Reliability Maturation Program Review	DEC 99	AUG 00	AUG 00(Ch-1)
Organic Spt for Depot Level of Repair	APR 00	DEC 00	DEC 00(Ch-1)

b. (U) Previous Change Explanations --

DT/EUTE completion delayed from Feb 90 to Apr 90 due to administrative delays in conducting tests. MS II/IV was changed from Jul 90 to Dec 90 due to unavailability of DAB principals and two additional unscheduled reviews of the program by the Conventional Systems Committee (CSC). Delay of contract award from Oct 90 to Dec 90 due to delay in DAB approval. Production milestones were delayed due to budget decrements and DAB decision to eliminate program concurrency. Verification of Apache Action Team Fixes was expected to start in September 1991 but actually started in April 1991; the completion date was originally March 1992, but completion occurred in July 1991. The Longbow Project Manager and the TRADOC System Manager have agreed that Force Development Test and Experimentation Phase I is no longer required and should be removed from the Approved Program Milestones; the Force Development Data Collection Effort (completed in November 1992) provided the same end result: the development of tactics, techniques, and procedures.

9c. (U) Schedule (Cont'd):
AH-64D

c. (U) Current Change Explanations --

(Ch-1) These changes are in the approved APB dated 13 May 1993.

(Ch-2) The Initial Production Readiness Review was held in July 1992.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 8 March 1991.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

AH-64C

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Preliminary Airworthines Eval			
Start	JAN 93	JAN 93	JAN 93(Ch-1)
Complete	MAR 93	MAR 93	MAR 93(Ch-1)
First Flight AH-64C	AUG 93	JAN 94	JAN 94(Ch-1)
Component Qualification	DEC 93	DEC 93	DEC 93(Ch-1)
Long Lead IPR	OCT 94	OCT 94	OCT 94(Ch-1)
Long Lead Time Items Contract Award	NOV 94	NOV 94	NOV 94(Ch-1)
Development Test			
Start	JUL 94	JUL 94	JUL 94(Ch-1)
Complete	SEP 94	SEP 94	SEP 94(Ch-1)
Force Dev Test and Experimentation			
Start	OCT 94	OCT 94	OCT 94(Ch-1)
Complete	NOV 94	NOV 94	NOV 94(Ch-1)
Production Readiness Review	JUN 95	JUN 95	JUN 95(Ch-1)
Milestone IIIA (DAB)	NOV 95	NOV 95	NOV 95(Ch-1)
LRIP Contract Award	NOV 95	NOV 95	NOV 95(Ch-1)
IOT&E			
Start	JAN 95	JAN 95	JAN 95(Ch-1)
Complete	MAR 95	MAR 95	MAR 95(Ch-1)
Milestone IIIB (DAB)	OCT 97	OCT 97	OCT 97(Ch-1)
First Production Delivery	JUN 97	JUN 97	JUN 97(Ch-1)
Full Rate Production Contract Award	NOV 97	NOV 97	NOV 97(Ch-1)
First Unit Equipped	OCT 97	OCT 97	OCT 97(Ch-1)
Organic Spt for Intermed Level of Repair	OCT 97	OCT 97	OCT 97(Ch-1)

9a. (U) Schedule (Cont'd):
AH-64C

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
IOC	DEC 97	DEC 97	DEC 97(Ch-1)
Reliability Maturation Program Review	AUG 00	AUG 00	AUG 00(Ch-1)
Organic Spt for Depot Level of Repair	DEC 00	DEC 00	DEC 00(Ch-1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) These schedule milestones for the AH-64C have been added to the APB.

d. (U) References --

(U) Development Estimate:
DAE approved APB dated 13 May 1993.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

10. (U) Performance Characteristics:
AH-64D

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Vertical Rate of Climb (ft per min) @ 4000'/95 deg F/95% MRP loaded with 4 laser and 4 RF Hellfire, 4 ATAS, 320 rds of 30mm, and fuel for 1.83 hr mission endurance	850	850 / 450	TBD	850
Cruise Speed (primary mission config) (knots)	145	145 / 145	TBD	145
Primary Mission Endurance (hrs)	1.83	1.83 / 1.83	TBD	1.83

Longbow, December 31, 1992

10a. (U) Performance Characteristics (Cont'd):
AH-64D

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Alternate Mission Endurance with full fuel (hrs, sea level, standard)	2.5	N/A	/ N/A	N/A	N/A	(CH-1)
Ordnance Load (primary mission config)						
Hellfire (no.)	16	16	/ 8	TBD	8	
30mm Rounds (no.)	1200	1200	/ 320	TBD	320	

(b)(1)

[redacted]

Longbow, December 31, 1992

10a. (U) Performance Characteristics (Cont'd):
AH-64D

DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)			

Longbow, December 31, 1992

10a. (U) **Performance Characteristics (Cont'd):**
AH-64D

	DE	Approved Program Objective/Threshold	Demon-strated Perf	Current Estimate
(b)(1)				

Longbow, December 31, 1992

10b. (b)(1)

(b)(1)

[redacted]

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 8 March 1991.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

AH-64C

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Cruising Airspeed in Primary Mission Configuration (KTAS)	145	145	/ 145	TBD	130	(CH-1)
Ferry Range (NM)	755	755	/ 740	TBD	755	(CH-1)
Primary Mission Endurance (hrs)	1.83	1.83	/ 1.83	TBD	1.83	(CH-1)
Mean Time to Repair (hrs)	1.5	1.5	/ 1.5	TBD	1.5	(CH-1)

b. (U) Previous Change Explanations -- None.

10c. (U) Performance Characteristics (Cont'd):
AH-64C

c. (U) Current Change Explanations --

(Ch-1) These parameters are in the approved APB dated 13 May 1993.

d. (U) References --

(U) Development Estimate:
DAE approved Acquisition Program Baseline dated 13 May 1993.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
AH-64D

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	1105.5	1195.8	1195.8
Procurement	1520.7	2067.2	2067.2
A/F Modifications	(824.9)		(1115.5)
FCR	(406.4)		(490.5)
Total Flyaway	(1231.3)		(1606.0)
A/F Modifications	(155.6)		(294.9)
FCR	(65.0)		(14.3)
Total Other Wpn Sys	(220.6)		(309.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(68.8)		(152.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	2626.2	3263.0	3263.0
Escalation	544.5	481.5	481.5
Development (RDT&E)	(11.6)	(4.6)	(4.6)
Procurement	(532.9)	(476.9)	(476.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3170.7	3744.5	3744.5

The aircraft portion of the RDT&E program is not readily allocable between the AH-64C and AH-64D. The Longbow program has been restructured to allow funding to build two AH-64C prototypes. Although RDT&E sunk costs are common to both the AH-64C and AH-64D programs, in fact, the AH-64C development costs are leveraged by the AH-64D sunk costs, which can be apportioned by any of several different methods. (For example, the sunk costs could be allocated according to the relative proportion of production quantities, of

11a. (U) Total Program Cost and Quantity (Cont'd):
developmental prototype quantities, or of engineering and manufacturing hours.) Here, the costs are apportioned in accordance with the appropriation language as of the fourth quarter of FY 92. Therefore, all prior development costs for the aircraft have been allocated to the AH-64D model only, as is PGSE development. Only a small portion of the development costs ($85.2M) is allocated to the AH-64C. All FCR development costs are applicable to the AH-64D.

AH-64D

b. (U) Quantity --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	0	0
Procurement	227	227	227
Total	227	227	227

Note: Excludes 4 RDT&E prototype from the Current Estimate that is not considered fully configured.

The nonfully-configured RDT&E units to be produced include 4 AH-64D airframes and 10 Fire Control Radars. The number of LRIP units approved at the Milestone II decision is 28 Longbow AH-64Ds.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 8 March 1991.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

11a. (U) Total Program Cost and Quantity (Cont'd):
AH-64C

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	78.5	78.5	78.5
Procurement	2683.3	2683.3	2683.3
Flyaway	(1899.7)		(0.0)
Total Flyaway			(1899.7)
Total Flyaway	(1899.7)		(1899.7)
Other Weapon System	(566.7)		(0.0)
Total Other Weapon Sys			(566.7)
Total Other Wpn Sys	(566.7)		(566.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(216.9)		(216.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 91 Base-Year $	2761.8	2761.8	2761.8
Escalation	1074.4	1074.4	1074.4
Development (RDT&E)	(6.7)	(6.7)	(6.7)
Procurement	(1067.7)	(1067.7)	(1067.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	3836.2	3836.2	3836.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	531	531	531
Total	531	531	531

Note: Excludes 2 RDT&E prototype from the Current Estimate that is not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated 13 May 1993.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

AH-64D

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3744.5	3196.4	3744.5
(2) Quantity	227	227	227
(3) Unit Cost	16.496	14.081	16.496
b. (U) Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity	0	0	0
(3) Unit Cost	N/A	N/A	N/A

The estimate includes the Longbow AH-64D allocated share of airframe development and modification costs, the Longbow Fire Control Radar development and production costs, and a portion of the Longbow Hellfire sunk costs. (Other Longbow Hellfire RDT&E and production costs are not included.)

Allocation of all development costs except $85.2M (see section 11) along with procurement cost increases to the AH-64D program creates a Nunn-McCurdy unit cost breach. Since the determination was not made in time to provide the required unit cost breach information in this SAR, it will be provided in section 12 (expanded) of the June 1993 SAR.

AH-64C

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. (U) Program Acquisition	(Dec 92 SAR)	(DEC 92 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	3836.2	3836.2	3836.2
(2) Quantity	531	531	531
(3) Unit Cost	7.224	7.224	7.224

12. (U) **Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):**

AH-64C

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. (U) Current Procurement --	(FY 1993)	(FY 1993)	(FY 1994)
(1) Cost (TY$)	0.0	0.0	0.0
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	0.0	0.0	0.0
(2) Quantity			
(3) Unit Cost	N/A	N/A	N/A

The estimate includes the Longbow AH-64C allocated share of airframe development and modification costs.

13. (U) Cost Variance Analysis:
AH-64D

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1117.1	2053.6	0.0	3170.7
Previous Changes:				
Economic	-4.1	-53.4	-	-57.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+57.4	+26.1	-	+83.5
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	+53.3	-27.6	-	+25.7
Current Changes:				
Economic	-13.2	-146.8	-	-160.0
Quantity	-	-	-	-
Schedule	-	+1.2	-	+1.2
Engineering	-	-	-	-
Estimating	+43.2	+444.0	-	+487.2
Other	-	-	-	-
Support	-	+219.7	-	+219.7
Subtotal	+30.0	+518.1	-	+548.1
Total Changes	+83.3	+490.5	-	+573.8
Current Estimate	1200.4	2544.1	-	3744.5

13a. (U) Cost Variance Analysis (Cont'd):
AH-64D

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1105.5	1520.7	0.0	2626.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+51.4	+18.8	-	+70.2
Other	-	-	-	-
Support	-	-2.0	-	-2.0
Subtotal	+51.4	+16.8	-	+68.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+38.9	+355.9	-	+394.8
Other	-	-	-	-
Support	-	+173.8	-	+173.8
Subtotal	+38.9	+529.7	-	+568.6
Total Changes	+90.3	+546.5	-	+636.8
Current Estimate	1195.8	2067.2	-	3263.0

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised escalation rates
BY$ = N/A TY$ = -4.1
Estimating: Current/prior inflation offset
BY$ = 4.9 TY$ = 4.1

Costs related to schedule extension from 51 months to 70 months
BY$ = 46.5 TY$ = 53.3

13b. (U) Cost Variance Analysis (Cont'd):
AH-64D

Procurement
Economic: Revised escalation rates BY$ = N/A TY$ = -53.4
Estimating: Changes in recurring aircraft modification flyaway costs
BY$ = 18.8 TY$ = 26.1
Support: Reduction in support costs due to funding reduction
BY$ = -2.0 TY$ = -0.3

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-13.2
Adjustment for Current & Prior Inflation. (Estimating)	+7.0	+7.4
Increased scope of Air Vehicle Program Test Options, out-of-scope design changes, and refining of the estimate. (Estimating)	+31.9	+35.8
RDT&E Subtotal	+38.9	+30.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-146.8
Change in procurement buy schedule. (Schedule)	--	+1.2
Increase in Contractor System Program Management Requirements (Estimating)	+90.0	+110.7
Increase in Design to Unit Production First Unit Cost (Estimating)	+154.0	+194.4
Increase in Nonrecurring Requirements (Estimating)	+23.6	+30.1
Other Increases in Flyaway for GFE, ECOs, and Premodification Costs (Estimating)	+88.3	+108.8
Increase in Initial Spares Requirements due to Increases in Recurring Hardware Costs (Support)	+82.4	+107.3

13c. (U) Cost Variance Analysis (Cont'd):
AH-64D

	(Dollars in Millions) Base-Year	Then-Year
Inclusion of Government Matrix Support to Program Costs (Support)	+91.4	+112.4
Procurement Subtotal	+529.7	+518.1

AH-64C

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	85.2	3751.0	0.0	3836.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	85.2	3751.0	-	3836.2

13a. (U) Cost Variance Analysis (Cont'd):
AH-64C

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	78.5	2683.3	0.0	2761.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	78.5	2683.3	-	2761.8

b. (U) Previous Change Explanations --

c. (U) Current Change Explanations -- None.

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

AH-64D

a. (U) Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
11.750	0.008	--	1.047	0.066	0.970	--	0.127	2.218	13.968

b. (U) Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
13.968	-0.958	--	0.005	--	2.514	--	0.967	2.528	16.496

AH-64C

(U) Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.224	--	--	--	--	--	--	--	--	7.224

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) LONGBOW FCR FSD:
JOINT VENTURE MMC/WEC, ORLANDO, FL
DAAJ09-91-C-0175, CPIF/AF
Award: December 21, 1990
Definitized: December 21, 1990

Initial Contract Price		
Target	Ceiling	Qty
$312.6	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$324.9	N/A	0	$325.0	$331.8

15. (U) Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-0.4	$-3.4
Cumulative Variances To Date (01/31/93)	$-4.1	$-3.5
Net Change	$-3.7	$-0.1

Explanation of Change:

The cumulative cost variance of ($4.1M) is an unfavorable 2.9 percent. The cumulative schedule variance of ($3.5M) is an unfavorable 2.4 percent. The variances are primarily caused by the Mast Mounted Assembly design change and fabrication difficulties, by the additional labor required for Built In Test and other software development, and by problems with the drawings & material issuances involving the Low Power Radio Frequency (LPRF). Variances have stabilized, with recent trends toward slight improvements. The contract is 48% complete.

(U) AH-64 LONGBOW PHASE II:	Initial Contract Price Target	Ceiling	Qty
MCDONNELL DOUGLAS, MESA, AZ DAAJ09-89-C-A086, CPIF Award: August 30, 1989 Definitized: August 30, 1989	$194.7	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$371.8	N/A	0	$371.8	$371.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-7.0	$-5.5
Cumulative Variances To Date (01/31/93)	$-22.0	$-5.9
Net Change	$-15.0	$-0.4

Explanation of Change:

The cumulative cost variance of ($22.0M) is an unfavorable 11.36 percent, primarily the result of the level of design complexity, increased drawing count, and the expenditure of resources to support a very aggressive drawing recovery schedule. The cumulative schedule variance of ($5.5M) is an unfavorable 3.0 percent, caused by the delayed receipt of subcontractor components. The contract is 59 percent complete. The AH-64C effort has been added to the contract; definitization negotiations are currently being conducted.

16. (U) **Program Funding Summary** (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 36.0% (9 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 13.4% ($1013.9 / $7580.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

AH-64D

Appropriation	Prior Years (FY85-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2002)	Total
RDT&E	967.9	155.6	76.9	-	1200.4
Procurement	-	-	120.3	2423.8	2544.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	967.9	155.6	197.2	2423.8	3744.5

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

AH-64C

Appropriation	Prior Years (FY92-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-2009)	Total
RDT&E	46.0	15.0	15.0	9.2	85.2
Procurement	-	-	-	3751.0	3751.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	46.0	15.0	15.0	3760.2	3836.2

16c. (U) **Program Funding Summary (Cont'd):**
AH-64D

c. (U) Annual Summary -- AH-64D

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1985				17.7	14.7	14.7	14.7	3.4
1986				35.3	30.2	30.2	30.2	2.8
1987				88.4	77.6	77.6	77.6	2.7
1988				111.8	101.7	101.7	101.7	3.0
1989				140.3	132.7	132.7	132.7	4.2
1990				165.2	162.4	162.4	162.4	4.0
1991				132.8	135.8	135.8	135.1	4.3
1992				122.8	128.8	128.7	127.0	2.8
1993				171.4	184.0	111.8	22.2	2.4
1994				141.7	155.6			2.4
1995				68.4	76.9			2.3
1996								2.3
Subtot				1195.8	1200.4	895.6	803.6	

Obligated and expended amounts shown are as of 22 March 1993.

Obligated and expended amounts are divided between the AH-64C and AH-64D according to the proportion of each in the total program.

16c. (U) Program Funding Summary (Cont'd):
AH-64D

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2031 Aircraft Procurement, Army								
1995		65.1	29.9	105.0	120.3			2.3
1996	24	44.8	228.3	357.6	418.9			2.2
1997	46	7.1	293.9	393.4	471.0			2.2
1998	18	2.3	153.7	207.8	254.2			2.2
1999	58	4.5	335.2	390.2	487.9			2.2
2000	48		264.4	352.0	449.9			2.2
2001	33		171.8	235.5	307.6			2.2
2002			5.0	25.7	34.3			2.2
Subtot	227	123.8	1482.2	2067.2	2544.1			
Grand Total	227	123.8	1482.2	3263.0	3744.5	895.6	803.6	

16c. (U) Program Funding Summary (Cont'd):
AH-64C

c. (U) Annual Summary -- AH-64C

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1992				20.1	21.0	21.0	20.1	2.8
1993				23.3	25.0	15.2	3.0	2.4
1994				13.7	15.0			2.4
1995				13.4	15.0			2.3
1996				8.0	9.2			2.3
Subtot				78.5	85.2	36.2	23.1	

Obligated and expended amounts shown are as of 22 March 93.

Obligated and expended amounts are divided between the AH-64C and AH-64D according to the proportion of each in the total program.

Appropriation: 2031 Aircraft Procurement, Army

1997	6	0.9	26.9	36.3	43.5			2.2
1998	6	0.8	34.2	45.4	55.5			2.2
1999	6	0.5	24.5	31.7	39.6			2.2
2000	24		92.1	117.9	150.7			2.2
2001	39		144.0	190.8	249.2			2.2
2002	72		259.5	342.9	457.7			2.2

16c. (U) Program Funding Summary (Cont'd):
AH-64C

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

2003	72		254.4	351.3	479.3			2.2
2004	72		250.3	346.5	483.1			2.2
2005	72		246.8	342.5	488.0			2.2
2006	72		243.8	338.9	493.5			2.2
2007	72		225.7	320.5	476.9			2.2
2008	18		80.3	174.7	265.7			2.2
2009			15.0	43.9	68.3			2.2
Subtot	531	2.2	1897.5	2683.3	3751.0			
Grand Total	531	2.2	1897.5	2761.8	3836.2	36.2	23.1	

17. (U) Production Rate Data:

AH-64D

a. (U) Production Baseline Rate

This section is not required when a program is pre-Milestone III. No full-rate production baseline has been determined.

17b. (U) Production Rate Data (Cont'd):
AH-64D

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	0.0	0.0	0.0	0.0	0.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	138.0	120.3	81.1	+17.7	-39.2
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	2918.0	2423.8	2469.3	+494.2	+45.5

FY 1995 is the Long Lead Production year.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 227 - @ Peak Rate: 4.0/mo			
FY 91 Base-Year $	5.400	7.075	7.075
Then Year $	7.300	8.695	8.695
@ Qty 70 (1st three years) - @ Peak Rate: 3.8/mo			
FY 91 Base-Year $	9.300	9.559	9.559
Then Year $	11.700	11.274	11.274

AH-64C

a. (U) Production Baseline Rate

This section is not required when a program is pre-Milestone III. No full-rate production baseline has been determined.

17b. (U) Production Rate Data (Cont'd):
AH-64C

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost		0.0		N/A	N/A
Procurement Qty		0		N/A	N/A
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
FY 1995					
Procurement Cost	0.0	0.0	38.0	0.0	+38.0
Procurement Qty	0	0	0	0	0
Proc. Unit Cost	N/A	N/A	N/A	N/A	N/A
Balance of Proc. (FY 1996 to Complete)	3812.8	3751.0	3443.0	+61.8	-308.0

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 531 - @ Peak Rate: 6.0/mo			
FY 91 Base-Year $	0.000	3.578	0.000
Then Year $	0.000	4.979	0.000
@ Qty 6 (1st three years) - @ Peak Rate: 0.5/mo			
FY 91 Base-Year $	0.000	4.633	0.000
Then Year $	0.000	5.550	0.000

18. (U) Operating and Support Costs:
AH-64D

a. (U) Assumptions and Ground Rules --

Assumes 192 fielded AH-64D model aircraft each flying 14 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. At maturity (50,000 flight hours), the airframe Mean Time Between Failure (MTBF) goal is 19.5 hours and the Fire Control Radar goal is 150 hours. Source: January 1993 Cost Estimate for FY93 Baseline Cost Estimate (BCE). The Longbow AH-64D system has no antecedent.

18b. (U) Operating and Support Costs (Cont'd):
AH-64D

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AH-64D	Avg Annual Cost Per antecedent aircraft
Replenishment	0.3	N/A
Depot Maintenance	0.2	N/A
Military Personnel	0.5	N/A
Other	0.2	N/A
Total	1.2	N/A

c. (U) Contractor Support Costs -- None.

AH-64C

a. (U) Assumptions and Ground Rules --

Assumes 474 fielded AH-64C model aircraft each flying 14 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. The airframe Mean Time Between Failure (MTBF) goal is 19.5 hours at Maturity (50,000 flight hours). Source: January 1993 Cost Estimate for FY93 Baseline Cost Estimate (BCE). The Longbow AH-64C system has no antecedent.

18b. (U) Operating and Support Costs (Cont'd):
AH-64C

b. (U) Costs -- (FY AH-6 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per	Avg Annual Cost Per antecedent
Replenishment	0.3	N/A
Depot Maintenance	0.2	N/A
Military Personnel	0.5	N/A
Other	0.2	N/A
Total	1.2	N/A

c. (U) Contractor Support Costs -- None.

N-14 EMSP

49 1196

*** UNCLASSIFIED ***

ok

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AN/UYS-2A(V) EMSP

AS OF DATE: December 31, 1992

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAY 26 1993 11

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. **Designation and Nomenclature (Preferred Name):**
AN/UYS-2A(V) Enhanced Modular Signal Processor (EMSP), SEM E VARIANT

2. **DoD Component:** Navy

3. **Responsible Office and Telephone Number:**

PROGRAM EXECUTIVE OFFICER	CAPT DAVID BURGESS
UNDERSEA WARFARE (PMO428, RM 11E62)	Assigned: February 7, 1992
2531 JEFFERSON DAVIS HWY	AV 332-3094
ARLINGTON, VA 22242-5169	COMM (703) 602-3094 x102

4. **Program Elements/Procurement Line Items:**

RDT&E:
PE 0604507N Project V1440
PROCUREMENT:
APPN 1810 ICN 264000 (Navy)
APPN 1810 ICN 297500 (Navy)

No Security Objection
to Open Publication
~~(AS AMENDED)~~
93-0-0424
MAY 26 1993
Office of the Chief of
Naval Operations
Dept. of the Navy

5. **Related Programs:**
The Airborne Low Frequency Sonar (ALFS), AN/SQQ-89 Surface Ship ASW Sonar System, and the SURTASS/Low Frequency Active (LFA) programs are directly related to the AN/UYS-2A(V) development and will be affected by changes in schedule or performance. Each of these programs has the potential to affect the AN/UYS-2A(V) program through changes in required performance which could require new technology or interface development. Changes in desired unit quantities by customer programs

(OASD(PA) DFOISR 93-C-674

5. Related Programs (Cont'd):

could have a significant impact on the overall production base and hence the unit cost.

6. Mission and Description:

The AN/UYS-2() Enhanced Modular Signal Processor responds to expanding requirements for significant increases in signal processing power to meet the needs of emerging/upgraded systems. Replacing the earlier 1960s/70s based AN/UYS-1 technology, AN/UYS-2() provides state-of-the-art signal processing capability. The AN/UYS-2() is a programmable, data-flow, high-throughput, modular Navy Signal Processor capable of meeting Navy systems processing needs into the twenty-first century. The AN/UYS-2() consists of a family of signal processor elements in a common architectural format having diversified capabilities which can be matched to individual weapons system's specific requirements. The AN/UYS-2() and the associated software support environment, the Processing Graph Method (PGM), is more efficient to program and will have lower life cycle costs than other processors with comparable features. AN/UYS-2() initial development and production was in the form of the Standard Electronics Module (SEM) Format B, the AN/UYS-2(V). Aircraft requirements and packaging volume benefits for other applications called for a smaller, lighter signal processor with similar capacity and reduced power consumption. These requirements led to repackaging the SEM B version into a SEM Format E (AN/UYS-2A(V)).

7. Program Highlights:

a. Significant Historical Developments --

The Milestone I decision, and resultant Navy Decision Coordination Paper of September 1981, directed development of the AN/UYS-2() as the Navy's next generation standard signal processor. The FY83 Defense Authorization Proceedings, Title II, and Congressional Armed Services Committees directed that the AN/UYS-2() development program include a demonstration of the capability to use Very High Speed Integrated Circuit (VHSIC) technology. A comprehensive Milestone II process initiated in December 1982 led to approval for Engineering and Manufacturing Development (EMD), formerly referred to as Full Scale Engineering Development (FSED), in March 1983. Milestone II authorized FSED based on a forty-eight month schedule; directed parallel development of the VHSIC insertion program; and, planned for the procurement of a limited number of development units to be made available to user combat systems to support their development. In April 1987, ASN (RE&S) made the decision to proceed with development of both the SEM B and SEM E variants of AN/UYS-2(). A SECNAV Program Decision Memorandum of July 1989 directed that all user programs transition to the AN/UYS-2A(V), SEM E no later than FY93.

7b. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --

With appropriate Congressional subcommittees' approvals, a letter contract was signed, 27 March 1992, for 150 SEM Format E Variant (AN/UYS-2A(V)) at a cost not to exceed $265M. Precursor interaction with the Congress (and a favorable offer from the contractor for a quantity procurement) which had precipitated this contract, obviated normal Milestone III formal proceedings. Execution of the production contract for 150 AN/UYS-2A(V) units constituted post-Milestone III activity. Therefore, 11 December 1991 has been established as the defacto production decision and Milestone III completion date.

Completed Maintenance Demonstration 19 Aug 92.

Completed initial electrical testing of ALFS configuration alternate vendor power system.

ALFS configuration EDM was successfully delivered 21 November 1992.

Truncation of the SSN 21 SEAWOLF submarine program and termination of the P-3 Update IV program caused changes to the EMSP Multi-Year Procurement (MYP) configuration mix. Definitization of the MYP was delayed, without program impact, to accommodate the change.

In August 1992, PMO428 was formed from members of NAVSEA's PMS-412 organization and chartered under Program Executive Officer for Undersea Warfare on 14 October 1992.

c. Changes Since As Of Date --

Multi-Year Procurement (MYP) contract definitization negotiation was completed 26 Mar 93. A modification was issued to the MYP basic letter contract on 12 April 93 to officially change the mix of configurations and support kits procured. Award of the definitized contract is expected in May 93.

AN/UYS-2A(V) DT&E is scheduled to complete in April 93.

Completed SEM E DT-IID final environmental testing 9 April 93. Benchmark testing scheduled to complete April 93.

This is the final EMSP SAR based upon planned removal of the AN/UYS-2A(V) program from the MDAP list because the program is below the fiscal threshold.

8. Threshold Breaches:

There are no Acquisition Program Baseline (APB) breaches or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Production Estimate	Approved Program	Current Estimate
SEM E Multi-Year Procurement (MYP) Contract	MAR 92	MAR 92	MAR 92
Airborne Low Frequency Sonar (ALFs) Enclosure CDR	APR 92	APR 92	APR 92
SEM E PRR (Complete)	MAY 92	JAN 92	JAN 92(Ch-1)
SEM E DT-IID Testing	DEC 92	DEC 92	APR 93(Ch-2)
Milestone III (NPDM)	JAN 93	DEC 91	DEC 91(Ch-3)
Provisioning Tech Data Delivered to SPCC	AUG 93	AUG 93	AUG 93
First MYP Unit Delivered (ALFs)	SEP 93	SEP 93	SEP 93
Material Support Date	AUG 96	AUG 96	AUG 96
Navy Support Date	AUG 97	AUG 97	AUG 97

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(CH-1) The final increment of the PRR was accelerated and completed in January 1992. It was inadvertently shown as May 92 in the previous SAR.

(CH-2) SEM E DT-IID testing interval has been extended from December 92 to April 93, but remains within threshold. A structural deficiency with the basic enclosure observed during initial vibration testing has been corrected.

(CH-3) A Milestone III decision was scheduled for January 1993. However, Congressional approval and execution of the production contract for 150 AN/UYS-2A(V) units obviated a Milestone III decision forum. Therefore, 11 December 1991 has been established as the defacto production decision and Milestone III completion date.

d. References --

Production Estimate:
Amended FY1992/93 President's Budget dtd Jan 92.

Approved Program:
NAE Approved Acquisition Program Baseline dated 26 January 1993.

10. **Performance Characteristics:**

a. Performance --

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Mission performance (MM/sec)					
High Throughput	100	>100 / 100		>115	(CH-1)
Medium Throughput	50	>50 / 50		>57	(CH-2)
Low Throughput	25	>25 / 25		>28	(CH-3)
Readiness/Support					
MTBF High Perf Level	750	>750 / 750		2585	(CH-4)
MTBF Med Perf Level	1200	>1200 / 1200		3220	(CH-5)
MTBF Low Perf Level	1500	>1500 / 1500		3785	(CH-6)
MTTR (hrs)	<.50	<.50 / .50		<.25	
Inherent Avail	>.99	>.99 / .99		>.99	
Fault Detection (%)	98	>98 / 98		98%	

Note:

ACRONYMS:
- MM/SEC = Million Multiplies Per Second
- MTBF = Mean Time Between Failures (hours)
- MTRR = Mean Time to Repair (hours)

The MTBF required is dependent upon the configuration complexity of the signal processor, with the more complex configurations having lower MTBF requirements. The following configurations are defined in the Test and Evaluation Master Plan:

PERFORMANCE LEVEL	ARITHMETIC PROCESSORS	GLOBAL MEMORIES	INPUT/OUTPUT PROCESSORS	INPUT SIGNAL CONDITIONER
HIGH (9/6/1/1)	9	6	1	1
MEDIUM (5/3/1/1)	5	3	1	1
LOW (3/2/1/1)	3	2	1	1

When an AN/UYS-2A(V) configuration is not identical to one of the configurations defined above, models are used to extrapolate to the appropriate configuration.

Fault Detection percentage is for combined on-line and off-line monitoring.

b. Previous Change Explanations -- None.

10c. Performance Characteristics (Cont'd):

c. Current Change Explanations --

(CH 1-3) Through the DT&E process, changes to the AN/UYS-2A(V) software have provided better efficiency. This efficiency improvement has manifested itself through demonstration of the benchmark application on an 8 Arithmetic Processor (AP) AN/UYS-2A(V). Performance calculations for the various configurations are extrapolations from the demonstration measurements.

(CH 4-6) Variances between MTBF Production Estimate and the Current Estimate are the result of hardware (lower power consumption) and software changes; and, more complete measured data available to include in the calculation.

d. References --

Production Estimate:
Amended FY1992/93 President's Budget dtd Jan 92.

Approved Program:
NAE Approved Acquisition Program Baseline dated 26 January 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	151.3	128.8	125.8
Procurement	258.0	253.2	260.7
Cabinets/SEMs	(225.1)		(233.3)
Peculiar Support	(32.9)		(27.4)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	89.1	N/A	0.0
Total FY 90 Base-Year $	498.4	382.0	386.5
Escalation	66.4	62.4	51.4
Development (RDT&E)	(7.6)	(12.6)	(11.1)
Procurement	(46.6)	(49.8)	(40.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(12.2)	(N/A)	(0.0)
Total Then-Year $	564.8	444.4	437.9

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	0	0	0
Procurement	151	151	151
Total	151	151	151

Production Estimate and Approved Program costs reflect FY92 escalation indicies. PM's Current Estimate costs reflect FY93 escalation indicies. The MYP contract uses "fixed" then-year values independent of escalation indicies adjustments. Hence, there is an artificial appearance of cost growth in the base year procurement account.

Quantities shown in section 11b. refer to equivalent average units (EAU). Because AN/UYS-2A(V) is modular by design and is configured differently for various user programs, no single production configuration adequately represents the "units" being procured (user configurations originally ranged from (11 AP/ 8 GM/ 1 IOP/ 1 ISC) to (3 AP/2 GM / 1 IOP/ 1 ISC)). An equivalent average unit description has been calculated by considering the total functional element (collections of standard electronic modules (SEMs)) count reflected by the quantity/configuration mix assumed when the multi-year procurement strategy was approved. The nominal equivalent average unit was calculated as (7.77 AP/ 5.76 GM/ 1.21 IOP/ 0.79 ISC). The EAU configuration is the reference for purposes of quantity (rounded to nearest integer) and cost reporting throughout the program.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
Amended FY1992/93 President's Budget dtd Jan 92.

Approved Program:
NAE Approved Acquisition Program Baseline dated 26 January 1993.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	437.9	564.8	437.9
(2) Quantity	151	151	151
(3) Unit Cost	2.900	3.740	2.900
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	67.6	67.6	50.7
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	67.6	67.6	50.7
(2) Quantity	44	44	26
(3) Unit Cost	1.536	1.536	1.950

Due to an administrative error, O&M,N funds were inadvertently included in the December 1991 SAR. The numbers reflected in this report have been corrected to reflect that the EMSP program has only non-acquisition O&M,N funds.

Because a multi-year procurement strategy including economic order quantity is being used, the OPN obligated for each year is not directly related to the number of units procured in that year.

Quantities shown in sections 12a. and 12b. refer to equivalent average units (EAUs).

The current quantity estimate (and associated calculated unit cost) reflects the realignment of quantities (in EAUs) agreed upon in the completed multi-year procurement contract definitization negotiations.

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Production Estimate	158.9	304.6	101.3	564.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	+0.1	-9.4	-	-9.3
Quantity	-	-	-	-
Schedule	-	+0.7	-	+0.7
Engineering	-	-	-	-
Estimating	-22.1	+9.3	-101.3	-114.1
Other	-	-	-	-
Support	-	-4.2	-	-4.2
Subtotal	-22.0	-3.6	-101.3	-126.9
Total Changes	-22.0	-3.6	-101.3	-126.9
Current Estimate	136.9	301.0	-	437.9

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Production Estimate	151.3	258.0	89.1	498.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.5	+8.2	-89.1	-106.4
Other	-	-	-	-
Support	-	-5.5	-	-5.5
Subtotal	-25.5	+2.7	-89.1	-111.9
Total Changes	-25.5	+2.7	-89.1	-111.9
Current Estimate	125.8	260.7	-	386.5

b. Previous Change Explanations --

RDT&E
Economic: None
Quantity: None
Schedule: None
Engineering: None
Estimating: None
Other: None
Support: None

Procurement
Economic: None
Quantity: None
Schedule: None

13b. Cost Variance Analysis (Cont'd):

Engineering: None
Estimating: None
Other: None
Support: None

O & M
Economic: None
Quantity: None
Schedule: None
Engineering: None
Estimating: None
Other: None
Support: None

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-1.6	-1.5
Revised estimate due to re-allocation of SEM B versus SEM E dollars. (Estimating)	-23.9	-20.6
RDT&E Subtotal	-25.5	-22.0
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-9.4
Change in procurement buy schedule. (Schedule)	--	+0.7
Adjustment for Current & Prior Inflation. (Estimating)	+2.9	+3.4
Revised estimate due to re-allocation of SEM B versus SEM E funds. (Estimating)	+5.3	+5.9
Revised estimate due to re-allocation of SEM B versus SEM E funds. (Support)	-5.5	-4.2
Procurement Subtotal	+2.7	-3.6

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
(3) O & M		
Revised estimate because the EMSP program has only non-acquisition O&M,N funds. (Estimating)	-89.1	-101.3
O & M Subtotal	-89.1	-101.3

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current Baseline Estimate to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3.740	-0.062	0.001	0.005	--	-0.756	--	-0.028	-0.840	2.900

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

ASIP*:	Initial Contract Price Target	Ceiling	Qty
AT&T FSAT**, GREENSBORO, NC N00024-92-C-5219, CPAF Award: October 8, 1991 Definitized: N/A	$49.5	N/A	0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$50.3	N/A	0	$44.3	$44.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.3	$0.0
Cumulative Variances To Date (12/31/92)	$0.4	$-4.3
Net Change	$0.1	$-4.3

Explanation of Change:

Program management level of effort tasks caused a cost variance on the ASIP contract.

The schedule variance on the ASIP contract was driven by the AN/BSY-2 work effort termination and the delay incurred in the recovering

15. Contract Information (Cont'd):
efforts for the ALFS configuration power system.

* ASIP = Acoustic Systems Integration Program.
** AT&T FSAT = Federal Systems Advanced Technologies.

PM0428 manages the ASIP contract for the EMSP users. All funding is appropriated to EMSP user programs and provided to PM0428 for obligation and execution management on the ASIP contract. The $50.3M is not appropriated to the EMSP PE.

SERVICE TEST MODEL (STM):	Initial Contract Price Target	Ceiling	Qty
AT&T FSAT, GREENSBORO, NC N00024-89-C-5239, FFP Award: September 29, 1989 Definitized: June 30, 1990	$67.5	N/A	16

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$71.7	N/A	19	$71.7	$71.7

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

STM contract represents FY89 and FY90 funds from both user programs and PM0428. PM0428 total obligation on this contract is $1.9M for FY89 and $9.0M for FY90. All other funding was provided by EMSP users.

b. Procurement --

AN/UYS-2A(V):	Initial Contract Price Target	Ceiling	Qty
AT&T, GREENSBORO, NC N00024-92-C-5211, FFP Award: March 27, 1992 Definitized: N/A	$265.0	N/A	150

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$265.0	N/A	150	$265.0	$265.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 53.8% (7 yrs/13 yrs)

(2) Percent Program Cost Appropriated: 58.7% ($257.1 / $437.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY87-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96-99)	Total
RDT&E	86.9	11.7	11.0	27.3	136.9
Procurement	170.2	50.7	37.7	42.4	301.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	257.1	62.4	48.7	69.7	437.9

In FY87, $37M was provided by NAVAIR to begin AN/UYS-2A(V), SEM E, development. It is not included in the AN/UYS-2 Program Element.

Through an administrative error, O&M,N funds were inadvertently included in the December 1991 SAR. The numbers reflected in this report have been corrected to reflect that the EMSP program has only non-acquisition O&M,N funds.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy								
1987				7.4	6.8	6.8	6.8	2.7
1988				3.5	3.3	3.3	3.3	3.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)								
1989				13.2	13.0	13.0	13.0	4.2
1990				17.7	18.1	18.1	18.1	4.0
1991				15.5	16.4	16.4	15.5	4.3
1992				15.7	17.1	17.1	9.9	2.8
1993				10.9	12.2	5.4		2.4
1994				10.3	11.7			2.4
1995				9.4	11.0			2.3
1996				7.5	9.0			2.3
1997				4.9	6.0			2.2
1998				4.9	6.1			2.2
1999				4.9	6.2			2.2
Subtot				125.8	136.9	80.1	66.6	
Appropriation: 1810 Other Procurement, Navy								
1988				0.5	0.5	0.5	0.5	2.7
1989				2.3	2.4	2.3	2.3	3.0
1990	1		2.9	5.2	5.6	5.6	3.9	4.2
1991				0.9	1.0	1.0	0.8	4.0

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 1810 Other Procurement, Navy (Cont'd)								
1992	50		81.8	83.4	93.1	47.5	1.4	4.3
1993	44		57.4	59.2	67.6			2.4
1994	26		39.9	43.4	50.7			2.4
1995	23		29.9	31.6	37.7			2.3
1996	7		21.4	26.0	31.8			2.3
1997				2.6	3.3			2.2
1998				2.8	3.6			2.2
1999				2.8	3.7			2.2
Subtot	151		233.3	260.7	301.0	56.9	8.9	
Grand Total	151		233.3	386.5	437.9	137.0	75.5	

Unit production prices for FY92 - FY96 are based on a multi-year buy.

Multi-Year Procurement (MYP) Then Year dollars reflect AT&T's NTE of $265M.

Because a multi-year procurement strategy including economic order quantity is being used, the annual flyaway costs do not directly relate to the number of units procured in that year.

Quantities shown in section 16c., Appropriation: 1810 Other Procurement, Navy, refer to equivalent average units (EAUs).

17. **Production Rate Data:**

a. Production Baseline Rate

Steady state, full production rate for the AN/UYS-2A(V) was not established. Rates consistent with capacity developed in support of MYP.

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	50.7	50.7	50.7	0.0	0.0
Procurement Qty	26	26	47	0	+21
Proc. Unit Cost	1.950	1.950	1.079	0.000	-0.871
FY 1995					
Procurement Cost	37.7	37.7	37.7	0.0	0.0
Procurement Qty	23	23	47	0	+24
Proc. Unit Cost	1.639	1.639	0.802	0.000	-0.837
Balance of Proc. (FY 1996 to Complete)	130.8	42.4	130.8	+88.4	+88.4

Procurement Average Unit Costs shown in section 17b. are based upon equivalent average units (EAUs).

Maximum rate is predicated on unit system test and is controlled by thermal chamber availability. Projected EAU deliveries also include kits of modules for systems which have not yet been integrated through system test. Hence, in some years, procurement quantity may artifically exceed maximum economic rate.

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	1/1

Deliveries shown in section 17c. refer to equivalent average units (EAUs).

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The AN/UYS-2A(V) is a component of a host weapon system. For this reason, the basic logistics element planning was developed with the flexibility to fit within the host system logistics planning environment. The AN/UYS-2A(V) logistics products developed for 20 years fleet use are designed to support the EMSP in a maintenance mode only. EMSP maintenance software provided to host systems was developed to be run in conjunction with their computer programs. Each user will be required to provide logistics support for the composite hardware and software system.

Operating and Support costs reflect estimates of the costs which will be incurred by the AN/UYS-2A(V) program to support Hardware Maintenance and Repair, Software Maintenance, Depot Facility Operations, In-Service Engineering Activity (ISEA), and Computer Program Support Activity (CPSA). These estimates were developed assuming a steady level of effort concurrent with 20 years in fleet use.

Previously reported Operation and Support costs incorrectly included both SEM B and SEM E costs. Current Operation and Support estimates reflect AN/UYS-2A(V) SEM E costs only.

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AN/UYS-2A(V) PROGRAM	Avg Annual Cost Per Antecedent
H/W MAINTENANCE	0.7	N/A
S/W MAINTENANCE	2.7	N/A
DEPOT/ISEA/CPSA	1.1	N/A
Total	4.5	N/A

c. Contractor Support Costs -- None.

A-5 AVENGER

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ok with redaction on page 6.

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AVENGER

AS OF DATE: December 31, 1992

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MAY 21 1993 5
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Forward Area Air Defense (FAADS) Line of Sight REAR (LOS-R); AVENGER

2. DoD Component: Army

3. Responsible Office and Telephone Number:

AVENGER PROJECT OFFICE	LTC ALBERT J. HAMILTON III
SFAE-MSL-AVG	Assigned: July 2, 1990
REDSTONE ARS, AL 35898-5799	AV 746-4633 COMM (205)876-4633

4. Program Elements/Procurement Line Items:

RDT&E:
PE 64306A (Shared) Project D646
PROCUREMENT:
APPN 2032 ICN C14900 (Army) (Superseded C9803)
APPN 2032 ICN CA0260 (Army)

OASD(PA) DFOISR 93-C-622

5. Related Programs:
Non-Line of Sight; Forward Area Air Defense Command, Control, and Intelligence; STINGER Reprogrammable Microprocessor.

6. Mission and Description:
The Forward Area Air Defense System (FAADS) encompasses an integrated air defense program to meet the growing air threat to the forward area of the battlefield through the 1990's. The FAADS provides total

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6. Mission and Description (Cont'd):

coverage in the division area and permits the enemy no preferred attack option. The FAADS Line of Sight-Rear (LOS-R) component is AVENGER. The LOS-R system is a lightweight, highly mobile and transportable surface-to-air missile/0.50 caliber machinegun system. It is operated by a two man crew for defense against helicopters and fixed-wing aircraft at low altitude in day or night operations and in clear or adverse weather. This system is mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV) and incorporates an operator's position with controls and displays, fire control electronics, and a Standard Vehicle Mounted Launcher (SVML) (including seeker coolant bottles and related hardware) to support and launch multiple STINGER missiles. The SVML provides output signals that are used to display to the gunner exactly where the STINGER missile is pointed. This driven sight reticle capability aids the gunner in severe background clutter and electronic countermeasures (ECM) environments. The system interfaces and functions with standard unmodified Basic STINGER, STINGER-POST and STINGER-RMP missile rounds. The AVENGER incorporates a 0.50 caliber machinegun to provide virtual attrition/suppression of threat aircraft operation, ranging from degradation of ordnance delivery accuracy to total abort of mission. The AVENGER Fire Unit (FU) provides man machine interface to maximize STINGER missile operational effectiveness in the threat environment. The AVENGER FU includes subsystems necessary for an operator to conduct an engagement sequence (detect, acquire, identify, track, and fire) against hostile aircraft with either the missile or the machinegun.

7. Program Highlights:

a. Significant Historical Developments --

A production contract was awarded to the Boeing Company in Aug 87. This contract provided for the production of 20 LOS-R units in conjunction with other support efforts such as Product Assurance, Configuration Management, Test and Evaluation, and Logistics Planning. Option II of the contract was awarded in Mar 88 for 39 fire units. The 1988 annual SAR submission rebaselined the SAR from a Planning Estimate to a Production Estimate. A Decision Coordinating Paper (DCP) was drafted in support of the Defense Acquisition Board (DAB) Milestone IIIB decision necessary for the Full-Rate Production phase of the AVENGER (LOS-R) weapon system. The US Army Missile Command (MICOM) Materiel Acquisition Review Board (MARB) package was approved November 28, 1989, and the preliminary Army Systems Acquisition Review Council (Pre-ASARC) was convened on November 30, 1989. AVENGER successfully completed Milestone Decision Review (MDR) III B April 90 for full-scale production. Production contract - Option IV was awarded May 1990. On January 17, 1991 the Army exercised the final option of the FY 87 contract to procure 72 fire units. The 100th fire unit was delivered in a ceremony on January 22, 1991 marking this achievement only 26-1/2 months after

7a. Program Highlights (Cont'd):

the 1st fire unit delivery. The ceremony received favorable coverage by all local media. Army Type Classified - Standard February 1990. The FY 91 President's Budget increased the quantity of fire units to be procured by 572, from 1207 to 1779. This was a result of the HQDA decision to convert Chaparral Corps Battalions to AVENGER, provide Prepositioned Material Configured in Unit Sets (POMCUS) stock, and realignment of units to fill Force Package III. AVENGER was deployed to Southwest Asia (SWA). No problems were encountered affecting operational readiness. All fire units have been returned. First Unit Equipped (FUE) EUSA occurred in September 1991.

AVENGER exceeded the 15% PAUC threshold on 26 September 91.

Boeing "ramp-up" in production was achieved in September 1991. Normal monthly delivery rate will now remain at 12 per month.

b. Significant Developments Since Last Report --
The current estimate for FUE-USAREUR changed by more than six months from July 1993 to June 1994 due to the prioritization of the force structure as directed by DA DCSOPS. This change does not exceed the APB. The FY 91 - FY 95 multiyear contract for 679 fire units (600 Army/79 USMC) was awarded 20 February 1992.
Program year three of the FY 91 - FY 95 multiyear contract was awarded November 28, 1992. The final delivery against DAAH01-86-C-A077 was made in December 1991. Ten fire units were delivered against DAAH01-92-C-0023, for a total of 335 delivered as of December 31, 1992. Fielding to the 24 MX (1-5 ADA) and 1-2 ADA (18th ABN Corps), Ft. Stewart, GA, were completed as of December 31, 1992. The program acquisition cost decreased $960.7M TY and decreased $634.1M BY. The fire unit quantity was reduced by 778, from 1779 to 1001. FUE-USAREUR, FUE-WESTCOM, and FUE-ARNG changed; FUE-USAREUR was delayed by more than six months. The operational availability (Ao) and the meantimes between operational mission failure (MTBOMF) for the fire unit and weapon system increased.

The AVENGER is expected to satisfy mission requirements.

c. Changes Since As Of Date --
Fielding to the 7 ID (2-62 ADA), Ft. Ord, CA, was completed 2nd quarter FY 93. Fire unit delivery is 13 ahead of schedule with a total of 368 delivered as of March 31, 1993.

8. Threshold Breaches:
There are currently no breaches to the Acquisition Program Baseline (APB) dated February 4, 1991, and no Nunn - McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Joint Requirements Management Board	JAN 86	JAN 86	JAN 86
Milestone IIIA	MAR 86	MAR 86	MAR 86
Nondevelopmental Item Candidate Evaluation (NDICE)			
Start	NOV 86	NOV 86	NOV 86
Complete	JUL 87	JUL 87	JUL 87
Type Classified - Limited Production Urgent (LPU)	APR 87	APR 87	APR 87
Initial Prod Contract Award - Option I	AUG 87	AUG 87	AUG 87
Contract Award - Option II	MAR 88	MAR 88	MAR 88
Force Dev Test & Experimentation (FDTE) I			
Start	MAY 88	MAY 88	MAY 88
Complete	JUN 88	JUN 88	JUN 88
Test Evaluation Master Plan (TEMP) Approved (Army)	JUL 88	JUL 88	JUL 88
Type Classified - LPU Extension	SEP 88	SEP 88	SEP 88
Initial Prod Deliveries Start	NOV 88	NOV 88	NOV 88
Contract Award - Option III (FY89)	DEC 88	DEC 88	DEC 88
FDTE II			
Start	FEB 89	FEB 89	FEB 89
Complete	MAR 89	MAR 89	MAR 89
Prod Qual Test (PQT)			
Start	MAR 89	MAR 89	MAR 89
Complete	SEP 89	DEC 89	DEC 89
Initial Oper Test & Eval (IOT&E)			
Start	APR 89	APR 89	APR 89
Complete	AUG 89	SEP 89	SEP 89
FUE-FORSCOM	APR 89	APR 89	APR 89
Option II Deliveries Start	JUL 89	JUL 89	JUL 89
Type Classified - Standard	NOV 89	FEB 90	FEB 90
Milestone IIIB	DEC 89	APR 90	APR 90
Contract Award - Option IV (FY 90)	DEC 89	MAY 90	MAY 90
Option III Deliveries Start	APR 90	APR 90	JUL 90
Contract Award - Option V (FY 91)	NOV 90	NOV 90	JAN 91
FUE-USAREUR	FEB 91	N/A	JUN 94(Ch-1)
Option IV Deliveries Start	APR 91	APR 91	SEP 91
Option V Deliveries Start	MAR 92	MAR 92	JUL 92
FUE-EUSA	JUN 92	N/A	SEP 91
FUE-WESTCOM	APR 96	N/A	JUN 95(Ch-2)
FUE-ARNG	AUG 96	N/A	DEC 95(Ch-2)

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Initial Operational Capability (IOC)	N/A	FEB 91	JAN 91

b. Previous Change Explanations --

The IOT&E Complete changed from August 1989 to September 1989 and the PQT Complete changed from September 1989 to December 1989 to accomodate test activity master schedules. The Type Classified - Standard changed from November 1989 to February 1990 and Milestone IIIB changed from December 1989 to April 1990 to accomodate completion of operational and technical tests. Contract Award - Option IV (FY 90) for Full Scale Production was delayed from December 1989 to May 1990 and Option IV Deliveries Start was changed from April 1991 to September 1991 as the Defense Acquisition Board production decision was not granted until April 1990. Contract Award - Option V (FY91) changed from November 1990 to January 1991 and Option V Deliveries Start changed from March 1992 to July 1992 to align award date, production lead time and planned deliveries. All FUEs were adjusted in previous SARs to reflect revised fielding schedule. First Unit Equipped (FUE) EUSA, FUE-USAREUR, and FUE-WESTCOM were changed from June 1992 to September 1991, October 1992 to July 1993, and June 1994 to November 1995, respectively, due to a HQDA directed change in sequencing of the deployment schedule. Initial Operational Capability (IOC) date added in accordance with DOD guidance and changed from August 1990 to January 1991. August 1990 represented deployment to Operation Desert Shield; January 1991 reflects the date of operational capability in Operation Desert Storm.

c. Current Change Explanations --

(Ch-1) FUE-USAREUR changed from July 1993 to June 1994 due to prioritization of the force structure as directed by DA DCSOPS. This change does not exceed the APB.

(Ch-2) FUE-WESTCOM changed from November 1995 to June 1995 and FUE-ARNG changed from February 1995 to December 1995 due to prioritization of the force structure as directed by DA DCSOPS.

d. References --

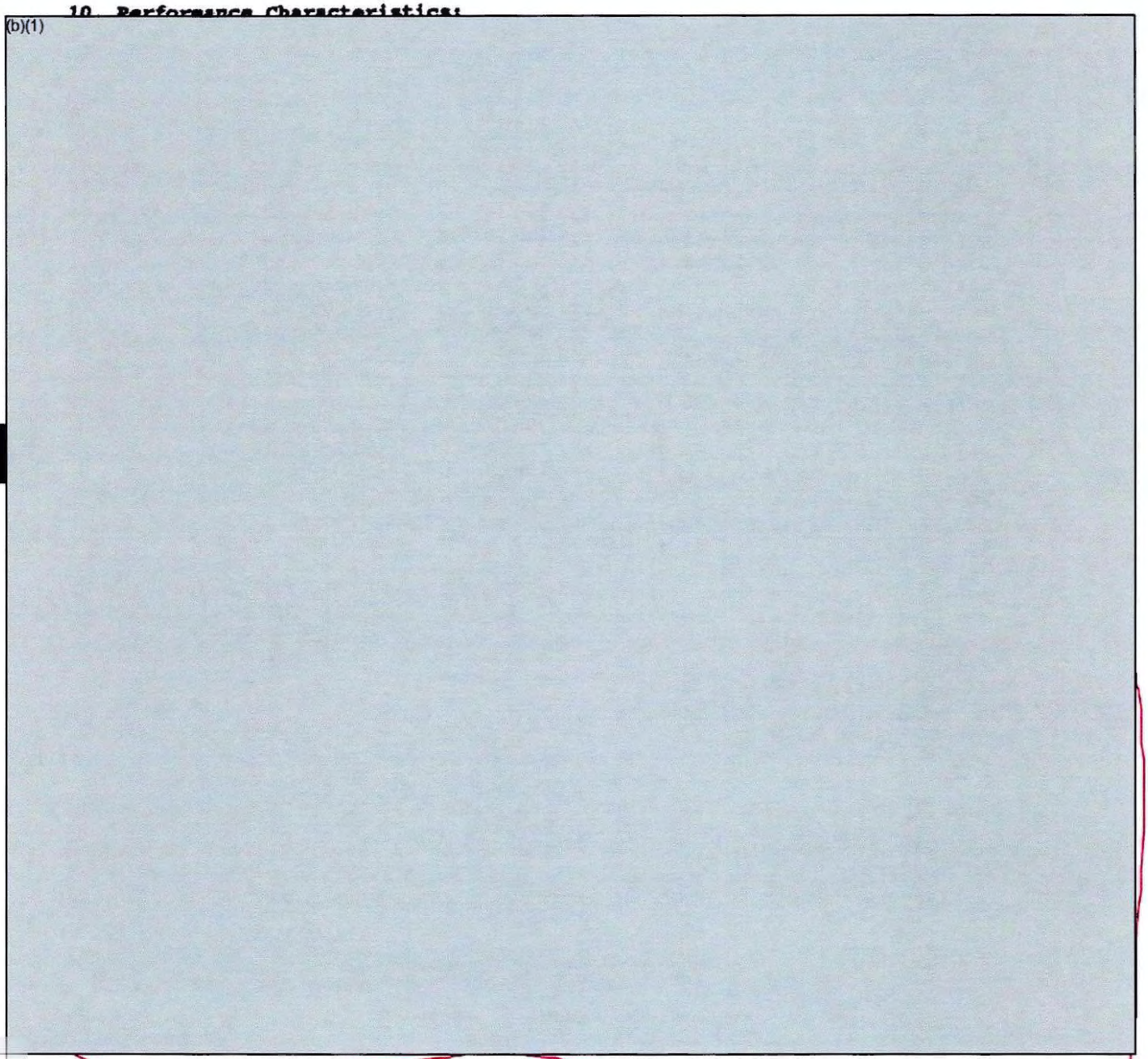
Production Estimate:
DAE approved Baseline dated March 2, 1989.

9d. Schedule (Cont'd):

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 February 1991.

10. Performance Characteristics:

(b)(1)



10a. **Performance Characteristics (Cont'd):**

Acronyms
ALDT = Administrative and Logistics Down Time
MTBOMF = Meam Time Between Operational Failures
MTTR ORG = Mean Time To Repair at Organizational Level
MTTR above ORG = Mean Time to Repair above Organizational Level
MOPP 0 = Mission Oriented Protective Posture Zero

b. Previous Change Explanations --

Number of STINGER Missiles changed from 4 to 8, MTTR ORG changed from 1.5 hrs to .40 hrs, and MTTR changed from 1.5 hrs to .37 hrs to reflect demonstrated performance.

c. Current Change Explanations --

(Ch-1) Ao changed from 0.71 to 0.83, demonstrated MTBOMF changed for the fire unit from 31 to 120 and for the weapon system from 57 to 176, current MTBOMF changed for the fire unit from 45 to >45 and for the weapon system from 54 to >54 based on the most recent test data.

d. References --

Production Estimate:
DAE approved Baseline dated March 2, 1989.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 February 1991.

11. **Total Program Cost and Quantity (Current Estimate in Millions of Dollars):**

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	13.3	13.3	13.3
Procurement	1089.8	1638.8	1075.6
Flyaway	(887.3)		(867.6)
Other Weapon Systems	(124.7)		(103.3)
Peculiar Support	(0.0)		(29.3)
Initial Spares	(77.8)		(75.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 89 Base-Year $	1103.1	1652.1	1088.9

11a. Total Program Cost and Quantity (Cont'd):

	Production Estimate	Approved Program	Current Estimate
Escalation	163.6	515.9	181.9
Development (RDT&E)	(-0.5)	(-0.5)	(-0.5)
Procurement	(164.1)	(516.4)	(182.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year $	1266.7	2168.0	1270.8
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	1207	1779	1001
Total	1207	1779	1001

Quantity is in fire units.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
DAE approved Baseline dated March 2, 1989.

Approved Program:
AAE Approved Acquisition Program Baseline dated 04 February 1991.

12. Program Acquisition/Current Procurement Unit Cost Summary:

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
a. Program Acquisition	(Dec 92 SAR)	(DEC 91 SAR)	(DEC 92 SAR)
(1) Cost (TY$)	1270.8	2231.5	1270.8
(2) Quantity	1001	1779	1001
(3) Unit Cost	1.270	1.254	1.270

12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	Current Estimate	Current Year UCR Baseline	Budget Year UCR Baseline
b. Current Procurement --	(FY 1993)	(FY 1993 APPN)	(FY 1994)
(1) Cost (TY$)	158.8	158.8	149.9
Less CY Adv Proc	44.9	44.9	0.0
Plus PY Adv Proc	32.6	32.6	32.5
Net Total	146.5	146.5	182.4
(2) Quantity	144	144	144
(3) Unit Cost	1.017	1.017	1.267

13. **Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	12.8	1253.9	0.0	1266.7
Previous Changes:				
Economic	-	+27.0	-	+27.0
Quantity	-	+519.8	-	+519.8
Schedule	-	+20.0	-	+20.0
Engineering	-	-	-	-
Estimating	-	+194.3	-	+194.3
Other	-	-	-	-
Support	-	+203.7	-	+203.7
Subtotal	-	+964.8	-	+964.8
Current Changes:				
Economic	-	-43.2	-	-43.2
Quantity	-	-697.2	-	-697.2
Schedule	-	-10.1	-	-10.1
Engineering	-	+46.9	-	+46.9
Estimating	-	-83.9	-	-83.9
Other	-	-	-	-
Support	-	-173.2	-	-173.2
Subtotal	-	-960.7	-	-960.7
Total Changes	-	+4.1	-	+4.1
Current Estimate	12.8	1258.0	-	1270.8

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	13.3	1089.8	0.0	1103.1
Previous Changes:				
Quantity	-	+344.7	-	+344.7
Schedule	-	+4.5	-	+4.5
Engineering	-	-	-	-
Estimating	-	+148.0	-	+148.0
Other	-	-	-	-
Support	-	+122.7	-	+122.7
Subtotal	-	+619.9	-	+619.9
Current Changes:				
Quantity	-	-490.3	-	-490.3
Schedule	-	-7.0	-	-7.0
Engineering	-	+37.7	-	+37.7
Estimating	-	-57.3	-	-57.3
Other	-	-	-	-
Support	-	-117.2	-	-117.2
Subtotal	-	-634.1	-	-634.1
Total Changes	-	-14.2	-	-14.2
Current Estimate	13.3	1075.6	-	1088.9

b. Previous Change Explanations --

Procurement

Economic: Revised escalation indices.

Quantity: Increase of 572 fire units.

Schedule: Increase cost for schedule of buy quantities. 28 FUs moved to outyears. 18 FUs moved from FY 95 to FY 00.

Estimating: Procurement of HMMWVs transferred to AVENGER line. PMO salaries changed from OMA to MIPA. Refinement of fire unit estimate. Correction of miscategorization in prior SAR. Refinement of fire unit estimate incorporates MY contract data, MY strategy for FY 96-00. Dual source SVML strategy. Revised HMMWV estimate from TACOM. Revised

13b. Cost Variance Analysis (Cont'd):

procurement support estimate: change from a product office to a separate project office. Refined estimate for engineering support of production. Refined ECO estimate.

Support: TPF transferred to AVENGER line. Added initial spares, training equipment, GFE to support additional 572 fire units. Correction of miscategorization in previous SAR. Refined estimate for revised training/support equipment requirements. Refinement of TPF estimate, extension beyond FY 97. Revised initial spares requirement, based on refined failure factors.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised escalation indices. (Economic)	--	-43.2
Current and prior inflation offset. (Estimating)	+3.0	+2.1
Decrease of 778 fire units. (Quantity)	-490.3	-697.2
Decrease Total Package Fielding (TPF) for reduction of 778 fire units. (Support)	-5.7	-8.9
Decrease training/support eqipment for reduction of 778 fire units. (Support)	-69.4	-98.0
Decrease initial spares for reduction of 778 fire units. (Support)	-52.6	-79.2
Current and Prior Inflation Offset (Support)	+0.2	+0.1
Allocation of schedule variance associated with quantity decrease. (Schedule)	-7.0	-10.1
Allocation of estimating variance associated with quantity decrease. (Estimating)	-71.0	-102.1
P3I cut-in (ECU/PPU, C2I, and others) (Engineering)	+37.7	+46.9
Revised procurement strategy (competitive SVML, delete 2nd MYP) (Estimating)	-13.6	-18.4
Refinement of ECO, in-house requirements. (Estimating)	+24.3	+34.5
Refinement of training/support equipment estimate. (Support)	+17.3	+22.0

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Refinement of initial spares estimate. (Support)	-7.0	-9.2
Procurement Subtotal	-634.1	-960.7

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.057	-0.002	--	0.021	--	-0.027	--	0.001	-0.007	1.050

b. Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.049	-0.016	0.040	0.010	0.047	0.110	--	0.030	0.221	1.270

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

PMS NDI ITEM WEAPON SYST:	Initial Contract Price Target	Ceiling	Qty
BOEING AEROSPACE COMPANY, HUNTSVILLE, AL DAAH01-86-C-A077, FFP Award: August 1, 1987 Definitized: August 1, 1987	$42.6	N/A	59

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$246.5	N/A	325	$246.5	$246.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

15. Contract Information (Cont'd):

Explanation of Change:

This is the final report. Deliveries are complete. A Contract Performance Report (CPR) is not required for this Firm Fixed Price (FFP) contract.

PMS NDI ITEM WEAPON SYST:	Initial Contract Price Target	Ceiling	Qty
BOEING AEROSPACE COMPANY, HUNTSVILLE, AL DAAH01-92-C-0023, FFP Award: October 4, 1991 Definitized: February 20, 1992	$54.0	N/A	18

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$436.6	N/A	679	$436.6	$436.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$0.0	$0.0
Cumulative Variances To Date	$	$
Net Change	$0.0	$0.0

Explanation of Change:

A CPR is not required for this FFP contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 72.7% (8 yrs/11 yrs)

(2) Percent Program Cost Appropriated: 62.9% ($799.3 / $1270.8)

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY86-93)	Budget Year (FY94)	Budget Year (FY95)	Balance To Complete (FY96)	Total
RDT&E	12.8	-	-	-	12.8
Procurement	786.5	149.9	189.7	131.9	1258.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	799.3	149.9	189.7	131.9	1270.8

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2040 Research, Development, Test + Eval, Army								
1986				4.5	4.2	4.2	4.2	2.7
1987				2.8	2.7	2.7	2.5	3.4
1988				6.0	5.9	5.9	5.9	4.4
Subtot				13.3	12.8	12.8	12.6	
Appropriation: 2032 Missile Procurement, Army								
1987	20	4.1	30.6	41.3	41.2	36.9	36.4	3.4
1988	39	1.3	38.8	62.0	64.1	45.3	44.8	4.4
1989	88	1.4	75.6	92.1	98.8	98.8	89.6	4.2

16c. **Program Funding Summary (Cont'd):**

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year$	Total Then-Year $			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	
Appropriation: 2032 Missile Procurement, Army (Cont'd)								
1990	106	1.9	88.0	110.1	121.9	118.7	111.9	4.0
1991	88		76.1	103.7	118.0	116.8	95.1	3.4
1992	144		132.5	157.1	183.7	157.5	72.1	2.6
1993	144		107.5	132.6	158.8	105.3	2.2	2.4
1994	144		114.7	122.0	149.9			2.3
1995	150		125.5	151.1	189.7			2.3
1996	78		69.6	103.6	131.9			2.2
Subtot	1001	8.7	858.9	1075.6	1258.0	679.3	452.1	
Grand Total	1001	8.7	858.9	1088.9	1270.8	692.1	464.7	

Rollaway cost adjusted for FY91-95 Multi Yr Proc (MYP) Adv Funding.

17. **Production Rate Data:**

a. Production Baseline Rate

The steady-state, full-rate production baseline of 12 per month was approved by the Acquisition Decision Memorandum (ADM) dated April 1990.

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minumum Sustaining	Current Estimate	Maximum	Min Sustain less CE	Maximum less CE
FY 1994					
Procurement Cost	149.9	149.9	149.9	0.0	0.0
Procurement Qty	144	144	144	0	0
Proc. Unit Cost	1.041	1.041	1.041	0.000	0.000
FY 1995					
Procurement Cost	189.7	189.7	189.7	0.0	0.0
Procurement Qty	150	150	150	0	0
Proc. Unit Cost	1.265	1.265	1.265	0.000	0.000
Balance of Proc. (FY 1996 to Complete)	732.1	131.9	471.5	+600.2	+339.6

(Note: The funded delivery period is 2 months for FY 98 for the minimum case. The funded delivery period is 2 months for FY 98 for the maximum case.)

c. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	355/368

d. Approved Design-to-Cost Objective -- N/A.

Since AVENGER consists primarily of off-the-shelf Non-Developmental Items (NDI), Design-to-Cost Goals are not applicable.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Operating and support costs are included for 1207 AVENGER (LOS-R) fire units including training base, floats and spares. OTEMP is 1481 kilometers per year. Twenty full-up years, plus ramp up are costed for the fire units. Military personnel costs included two crew members per fire unit, maintenance personnel, and support personnel. O&M costs include all fielding costs, replenishment and replacement parts, petroleum, oil and lubricants, ammunition, depot maintenance material and labor, field maintenance labor, transportation, personnel replacement training, military personnel direct charges,

18a. Operating and Support Costs (Cont'd):
project management and modification kits. Avenger has no antecedent system.

Note: The latest BCE for Operating & Support (O&S) was developed in accordance with the new streamlining policy per DA. This excluded certain O&S cost elements; therefore the O&S represents the cost from the last full BCE (Qty 1207) in lieu of 1779.
Source: BCE excursion dated December 1989.

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AVENGER Fire Unit	Avg Annual Cost Per Antecedent Unit
Personnel	0.2	N/A
O&S Consumables	0.0	N/A
Direct Depot Maint.	0.0	N/A
Sustaining Investment	0.0	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	0.0	N/A
Total	0.2	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1993 & Prior	FY1994	FY1995	Balance To Complete	Total
Depot Maintenance	2.6	---	---	---	2.6
Other	3.0	---	---	---	3.0
Total	5.6	---	---	---	5.6

Depot Maintenance: Provides for repair and overhaul of system.
Other: Provides new equipment training team (NETT) training for operator and maintenance courses. If NETT is not conducted in

18c. Operating and Support Costs (Cont'd):
sufficient quantities and at the appropriate times, the AVENGER system will not meet its initial operating capability.