

0-0-2 GPALS

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

PROGRAM: SDS-GPALS

AS OF DATE: December 31, 1994

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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	LTG Malcolm O'Neill
Organization, The Pentagon	Assigned: February 1, 1993
Washington, DC 20301-7100	AV 225-7060 COMM (703) 695-7060

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

RDT&E:

PE 0208060C (Shared), 0603214C (Shared), 0603215C (Shared), 0603216C (Shared)
PE 0603217C (Shared), 0603218C (Shared), 0603220C (Shared), 0603221C (Shared)
PE 0603222C (Shared), 0603223C (Shared), 0603744C (Shared), 0604216C (Shared)
PE 0604217C (Shared), 0604220C (Shared), 0604225C (Shared)

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DEPARTMENT OF DEFENSE

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

MILCON:

PE 0603218C (Shared), 0604220C (Shared)

5. (U) Related Programs:

THAAD System formerly Upper Tier Theater Missile Defense System (UTTMDS) and PATRIOT PAC-3.

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

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

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 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., 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 January 29, 1991, he directed refocus of the SDI Program to "...provide protection from limited ballistic missile strikes, whatever their source." On September 12, 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 December 5, 1991, the President signed into law the FY92 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 FY92 Authorization Act. On January 28, 1992, an ADM 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.

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 development from the limited defense system architecture. As set forth in the 1991 Missile Defense Act and its amendment in the FY93 Defense Authorization Act, the Department is planning with Congressional approval to deploy the initial User Operational Evaluation System (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

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

turn of the decade as the initial step toward a highly effective defense of the United States. In May 1993, the Secretary of Defense announced the renaming of Strategic Defense Initiative Organization as the Ballistic Missile Defense Organization.

The SDS-GPALS mission was significantly altered based on the guidance issued by the Clinton administration (as part of the Bottom-Up Review [BUR]) and budget reductions (FY94 Defense Appropriation Act) enacted by Congress. This new BMDO guidance emphasizes that Theater Missile Defense (TMD) should receive priority over National Missile Defense (NMD) recognizing the low probability of a long-range ballistic missile attack from the former Soviet Union or China. Consequently, BMDO's main priority is now TMD acquisition while strategic defense systems such as Global Missile Defense (GMD) and NMD have been transferred to technology readiness programs from acquisition roles. Revisions to The Missile Defense Act of 1991 reflects this new BMDO defense priority. Therefore SDS-GPALS new architecture will retain its TMD acquisition implementation strategy while relegating the remaining segments to technology readiness programs.

b. (U) Significant Developments Since Last Report --

The old SDS-GPALS management strategy outlined in the internal DoD "White Paper" was to implement six Major Defense Acquisition Programs (MDAP) made up of interceptors, sensors and communications systems. Because of DoD direction and BMDO objectives, this six MDAP structure has been effectively reduced to two: THAAD System and PATRIOT PAC-3, for which separate SARs are prepared.

The deletion of PATRIOT PAC-3 from this SAR is the final step in rendering the SDS-GPALS program, based on the "White Paper" six MDAP management strategy, complete with no formal DoD acquisition program objectives. That is, the six MDAP strategy has been either baselined into separate SARs (THAAD System and PATRIOT PAC-3) or has been transferred to Technology Readiness programs. Therefore, this is the final SAR for this program because the current SDS-GPALS management strategy contains no major acquisition programs.

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

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.

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9. (U) Schedule:

a. (U) Milestones --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	N/A
Milestone III (DAB)	TBD	N/A	N/A
IOC	TBD	N/A	N/A

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

c. (U) Current Change Explanations -- N/A

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

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

	PE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Effectiveness Percent	N/A	N/A / N/A	N/A	N/A
Destroyed of Reentry Vehicles Launched				

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	4069.4
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	42.2		44.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 88 Base-Year \$	20877.7	0.0	4113.4
Escalation	6754.7	0.0	1046.2
Development (RDT&E)	(6741.9)	(0.0)	(1028.8)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(12.8)	(N/A)	(17.4)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	27632.4	0.0	5159.6

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

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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) Unit Cost Summary:

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

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13. (U) Cost Variance Analysis:

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

	RDTE&	PROC	MILCON	TOTAL
Planning Estimate	27577.4	0.0	55.0	27632.4
Previous Changes:				
Economic	-95.7	-	+0.4	-95.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-20273.6	-	+6.0	-20267.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-20369.3	-	+6.4	-20362.9
Current Changes:				
Economic	-6.5	-	-0.1	-6.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	6.4	-	0.1	+6.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.1	-	-	-0.1
Total Changes	-20369.4	-	+6.4	-20363.0
Adjustments	-2109.8	-	-	-2109.8
Current Estimate	5098.2	-	61.4	5159.6

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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	-15184.0	-	+1.9	-15182.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-15184.0	-	+1.9	-15182.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.0	-	-0.1	+3.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.0	-	-0.1	+3.9
Total Changes	-15180.0	-	+1.8	-15178.2
Adjustments	-1586.1	-	-	-1586.1
Current Estimate	4069.4	-	44.0	4113.4

The adjustment reflects the deletion of PATRIOT PAC-3 (BMDO portion) funding from the SDS-GPALS program. This funding is transferred to the PATRIOT PAC-3 SAR.

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

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

requirements. Deletion of Upper Tier Theater Missile Defense System (UTMDS) for separate reporting. Refinement of estimate associated with the Missile Defense Act of 1991. Congressional reduction of Ground Surveillance Tracking System (GSTS) for 1992. Congressional reductions to meet reduction of requirements and evolving missions for 1992. Program reductions for technology readiness concepts to include EKV, BMC3, and NMD-GBR.

MILCON

Economic: Revised Escalation Indices and adjustment for negative program change.

Estimating: Adjustment for current and prior inflation. Additional costs for facilities to support the restructured GPALS program. Refinement of Planning and Design Requirements. Adjustments for Bottom-Up Review.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-6.5
Adjustment for Current & Prior Inflation. (Estimating)	+4.0	+6.4
RDT&E Subtotal	+4.0	-0.1
(2) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	+0.1
MILCON Subtotal	-0.1	--

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

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

15. (U) Contract Information:

The Brilliant Eyes and ERINT contracts are no longer part of the SDS-GPALS program and therefore will not be reported.

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: 67.9% (\$3502.0 / \$5159.6)

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

<u>Appropriation</u>	<u>Prior Years (FY88-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2008)</u>	<u>Total</u>
RDT&E	3470.5	180.6	183.4	1263.7	5098.2
Procurement	-	-	-	-	-
MILCON	31.5	3.0	2.1	24.8	61.4
O&M	-	-	-	-	-
Total	3502.0	183.6	185.5	1288.5	5159.6

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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

1988				143.9	147.5	147.5	147.5	3.0
1989				161.2	171.9	171.9	171.9	4.2
1990				275.5	306.2	306.2	306.2	4.1
1991				689.6	794.8	794.8	794.8	4.3
1992				918.6	1088.5	1085.0	1075.0	3.0
1993				662.1	803.9	803.0	799.0	2.7
1994				16.0	20.0	20.0	15.0	2.0
1995				107.5	137.7	35.0	5.0	2.7
1996				136.6	180.6			3.0
1997				134.7	183.4			3.0
1998				168.7	236.5			3.0
1999				165.5	239.1			3.0
2000				211.5	314.7			3.0
2001				53.7	82.3			3.0
2002				25.4	40.1			3.0
2003				24.9	40.4			3.0
2004				24.3	40.7			3.0

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

2005				38.8	67.0			3.0
2006				37.9	67.3			3.0
2007				37.0	67.7			3.0
2008				36.0	67.9			3.0
Subtot				4069.4	5098.2	3363.4	3314.4	

The SDS-GPALS funding summary reflects the deletion of PATRIOT PAC-3 funding from the SDS-GPALS program. This funding is transferred to the PATRIOT PAC-3 SAR.

Appropriation: 0500 Military Construction, Defense Agencies

1991				9.5	11.4	11.4	11.4	4.3
1992				9.0	11.2	11.2	11.2	2.8
1993				4.5	5.7	5.7	5.7	2.7
1994				2.1	2.7	2.7	2.2	2.6
1995				0.4	0.5	0.4	0.1	2.9
1996				2.2	3.0			3.0
1997				1.5	2.1			3.0
1998				1.9	2.7			3.0
1999				1.5	2.3			3.0

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16c. (U) 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: 0500 Military Construction, Defense Agencies (Cont'd)

2000				1.4	2.2			3.0
2001				1.4	2.2			3.0
2002				1.3	2.2			3.0
2003				1.3	2.2			3.0
2004				1.3	2.2			3.0
2005				1.2	2.2			3.0
2006				1.2	2.2			3.0
2007				1.2	2.2			3.0
2008				1.1	2.2			3.0
Subtot				44.0	61.4	31.4	30.6	
Grand Total				4113.4	5159.6	3394.8	3345.0	

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

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18. (U) 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: C/MH-53E

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

CH-53E (Super Stallion); MH-53E (Sea Dragon)

2. DoD Component: Navy3. Responsible Office and Telephone Number:

AIR ASW, ASSAULT, & SPECIAL MISSIONS MR. T. E. LAUX

PROGRAM, PMA-261, JP-1 RM 608

1421 JEFFERSON DAVIS HWY

ARLINGTON, VA 22243-1261

Assigned: July 30, 1993

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DEPARTMENT OF DEFENSE4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604212N, 0604714N, 0604260N

PROCUREMENT:

APPN 1506 ICN 0148 (Navy)

APPN 0350 ICN 1560 (NGRE)

MILCON:

PE 0206496N

95-C-0317

Ann 2 Andersen

5. Related Programs:SH-60B LAMPS MK III SEA HAWK; SH-60F CV HELLO; 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 RH-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

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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 91/92 National Guard and Reserve (NGRE) funds procured 12 MH-53Es and full support for the Navy Reserves. The last production lot was the FY-94 procurement. The production line shutdown will commence with FY-95 funding.

b. Significant Developments Since Last Report --
The last MH-53E was delivered to the Navy in September 1994.

This is the final SAR for the CH/MH-53 Program since more than 90 percent of the quantities have been delivered.

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

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There is a Nunn-McCurdy Program Acquisition Unit Cost breach of 17.4 percent (BYS). There are no other approved program breaches to the October 1990 Acquisition Program Baseline.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
FOT&E (CH-53E)	N/A	N/A	APR 83

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	SEP 90	N/A	SEP 95
MH-53E			
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	N/A	NOV 87	NOV 87
Production			
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

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 RDT&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 the time the new procurement objective could be obtained. Procurement objective was delayed as a result of quantity reduction and schedule delay.

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9c. Schedule (Cont'd):

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 October 17, 1990.

10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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 con- tinuous power S.L.)					
46.5K lbs GW (Internal Load)	170	170	/ 170	170	170
56K lbs GW (Internal Load)	140	140	/ 140	140	140
70K lbs GW (External Load)	100	100	/ 100	100	100

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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 MN Range 3000 MSL 91.5 F HOGF (lbs)	20000	16000	/ 16000	20000	20000
External Payload 50 MN 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	8.0	9.50	/ 9.50	7.72	9.50
Aircraft MMH/FH (org. corrective)					
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 time on station. Demonstrated performance during DT-II A through D OT-IIB. Demonstrated Performance reflects current achievements to date. Payload internal characteristic was changed from 16000 based on demonstrated performance.

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10c. Performance Characteristics (Cont'd):

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 October 17, 1990.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	93.3	182.4	202.9
Procurement	371.1	2434.9	1586.8
Airframe	(250.2)		(1052.6)
Engine	(46.9)		(187.4)
Avionics	(5.4)		(25.7)
Other GFE	(1.9)		(19.5)
Total Flyaway	(304.4)		(1285.2)
Other Weapon System	(29.4)		(99.5)
Peculiar Support	(0.0)		(101.2)
Initial Spares	(37.3)		(100.9)
Construction (MILCON)	0.0	2.8	2.8
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 73 Base-Year \$	464.4	2620.1	1792.5
Escalation	114.0	5228.6	3059.2
Development (RDT&E)	(7.0)	(101.2)	(148.2)
Procurement	(107.0)	(5122.8)	(2906.4)
Construction (MILCON)	(0.0)	(4.6)	(4.6)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	578.4	7848.7	4851.7
b. Quantity --			
Development (RDT&E)	4	4	4
Procurement	70	377	218
Total	74	381	222
c. Foreign Military Sales/International Cooperative Programs --			
None			

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

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 October 17, 1990.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 90 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY73\$)	1792.5	2620.1	
(2) Quantity	222	381	
(3) Unit Cost	8.074	6.877	17.412
b. Procurement			
(1) Cost (BY73\$)	1586.8	2434.9	
(2) Quantity	218	377	
(3) Unit Cost	7.279	6.459	12.701

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 90 APB)	<u>Percent</u> <u>Change</u>
c. Total Program			
(1) Cost (TYS)	4851.7	7848.7	
(2) Unit Cost	21.855	20.600	6.088

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12. Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
d. Procurement			
(1) Cost (TY\$)	4493.2	7557.7	
(2) Unit Cost	20.611	20.047	2.814

e. Changes from the Baseline Report - Not Applicable

f. Changes from the Previous SAR (DEC 93 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY73\$)	0.010	0.124
(2) PAUC (BY73\$)	0.004	0.055
(3) PAUC Quantity	222	N/A
(4) PAUC (TY\$)	0.006	0.027
(5) AUPC (TY\$)	-0.029	-0.141

g. Initial SAR

(1) Program Acquisition Cost (BY\$) --	6.3
(2) Program Acquisition Cost (TY\$) --	7.8

h. Unit Cost Changes.

(1) PAUC --

As a result of the substantial reductions in quantity since FY-90, the C/MH-53E has a 17.4% Nunn McCurdy Breach in base-year dollars. The Navy truncated the procurement program at 218 aircraft vice the 377 in the Approved Program Baseline (APB). The current APB date 17 October 1990 reflects approved acquisition quantities as 381 fully configured units (4 RDT&E; 377 Procurement). The current program is funded at 222 fully configured units (4 RDT&E; 218 Procurement).

(2) AUPC -- None.

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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	+4.4	+89.4	-0.2	+93.6
Quantity	-	+2780.4	-	+2780.4
Schedule	+1.5	+227.1	-	+228.6
Engineering	+180.6	+185.6	-	+366.2
Estimating	+35.1	+58.1	+0.4	+93.6
Other	+3.0	-	-	+3.0
Support	+18.6	+680.8	+7.2	+706.6
Subtotal	+243.2	+4021.4	+7.4	+4272.0
Current Changes:				
Economic	-1.0	-7.6	-	-8.6
Quantity	-	-	-	-
Schedule	-	0.6	-	+0.6
Engineering	6.9	-	-	+6.9
Estimating	1.7	3.4	-	+5.1
Other	-	-	-	-
Support	-	-2.7	-	-2.7
Subtotal	+7.6	-6.3	-	+1.3
Total Changes	+250.8	+4015.1	+7.4	+4273.3
Current Estimate	351.1	4493.2	7.4	4851.7

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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	-	+969.8	-	+969.8
Schedule	+1.6	-17.2	-	-15.6
Engineering	+82.3	-130.6	-	-48.3
Estimating	+10.7	+157.9	+0.2	+168.8
Other	+2.4	-	-	+2.4
Support	+10.5	+235.6	+2.6	+248.7
Subtotal	+107.5	+1215.5	+2.8	+1325.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	1.8	-	-	+1.8
Estimating	0.3	0.9	-	+1.2
Other	-	-	-	-
Support	-	-0.7	-	-0.7
Subtotal	+2.1	+0.2	-	+2.3
Total Changes	+109.6	+1215.7	+2.8	+1328.1
Current Estimate	202.9	1586.8	2.8	1792.5

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. Initiate design of mid-life upgrades and delete the requirements for the composite main rotor blade development.

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

Estimating: Refinement of R&D estimates and revised estimates for development of Composite Main Rotor Blade and configuration enhancements including system safety. Reduction for escalation and realignment of requirements. Adjustment for current and prior inflation.

Other: Cost overrun and award of contract incentive.

Support: Increase in BIS 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 negative 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. Reduction of 2 NGRE aircraft. Reduction of 4 aircraft from 214 to 210. Reduction during FY95 from 210 to 206 aircraft.

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. Delay of FY94 buy to FY95.

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

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

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. Allocation of costs associated with quantity reduction. Refinement of costs to reflect actuals. Addition of non-recurring costs for ramp-down previously shown as support costs. Adjustment of prior year estimates to reflect actuals. Budget reduction resulted in restructure of production shutdown efforts.

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. Adjustment for current and prior inflation. Increase costs for NGRE program. Decrease of initial spares and other weapons systems costs associated with quantity reduction. Alignment of support costs with flyaway costs. Adjustment of closeout of prior year actual costs. Adjustment for current and prior inflation.

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)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>ROD&E</u>		
Revised escalation indices. (Economic)	N/A	-1.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.6

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decreased estimate for SBIR and prior year vouchers. (Estimating)	-0.3	-0.7
Increase of estimate for additional final test & evaluation and program close-out. (Estimating)	+0.4	+1.8
Revised estimate to include addition of Integrated Mechanical Diagnostics (IMD). (Engineering)	+1.8	+6.9
RDT&E Subtotal	<u>+2.1</u>	<u>+7.6</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-7.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	+1.2	+5.4
Delay from FY 96 to FY 97 cost for the final testing and shutdown. (Schedule)	--	+0.6
Decrease Estimate for Line shutdown Program Close-out. (Estimating)	-0.3	-2.0
Adjustment for Current & Prior Inflation. (Support)	+0.5	+1.5
Decrease support cost estimate of requirements. (Support)	-1.2	-4.2
Procurement Subtotal	<u>+0.2</u>	<u>-6.3</u>

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.816	0.383	7.313	1.032	1.681	0.445	0.014	3.171	14.039	21.855

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

a. Procurement --			Initial Contract Price		
CH/MH-53E:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
UNITED TECHNOLOGIES CORP, STRATFORD, CT			\$737.3	\$0.0	34
N00019-91-C-0095, FFP					
Award: October 30, 1992					
Definitized: October 30, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$737.3	\$0.0	34	\$737.3	\$737.3	

Explanation of Change:

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

CH-53E:			Initial Contract Price		
United Technologies Corp., Stratford, CT			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-93-C-0053, FFP/CPO			\$260.6	N/A	12
Award: September 30, 1994					
Definitized: September 30, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$260.6	N/A	12	\$260.6	\$260.6	

Explanation of Change:

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

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

a. Program Status --

(1) Percent Program Completed: 79.3% (23 yrs/29 yrs)

(2) Percent Program Cost Appropriated: 99.0% (\$4804.4 / \$4851.7)

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

<u>Appropriation</u>	<u>Prior Years (FY73-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	324.1	10.6	9.3	7.1	351.1
Procurement	4472.9	-	20.3	-	4493.2
MILCON	7.4	-	-	-	7.4
O&M	-	-	-	-	-
Total	4804.4	10.6	29.6	7.1	4851.7

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligation	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
1977				16.0	21.7	21.7	21.7	2.9
1978				8.5	11.9	11.9	11.9	2.6

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

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pend	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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	10.6
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	5.4	5.0	4.2
1990				1.8	5.1	5.0	4.5	4.0
1991				6.1	17.7	17.7	16.9	4.3
1992				2.9	8.7	8.7	8.7	2.8
1993				3.8	11.6	11.6	10.7	2.7
1994				1.6	5.0	4.8	2.4	2.0
1995				1.9	6.2	0.4	0.1	2.7

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

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1996				3.2	10.6			3.0
1997				2.7	9.3			3.0
1998				1.3	4.4			3.0
1999				0.2	0.9			3.0
2000				0.2	0.9			3.0
2001				0.2	0.9			3.0
Subtot	4			202.9	351.1	317.5	312.0	

Appropriation: 1506 Aircraft Procurement, Navy

1977	6	23.6	53.3	81.7	120.3	120.3	120.3	3.8
1978								6.8
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	50.2	89.7	249.0	249.0	249.0	3.4

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C/MH-53E, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

1986	14	1.1	69.1	93.3	266.8	266.8	266.8	2.8
1987	14		62.3	77.1	228.2	228.2	228.2	2.7
1988	14	0.2	64.5	78.4	242.1	242.1	242.1	3.0
1989	14		61.4	72.0	231.5	231.5	231.5	4.2
1990	9		59.4	67.5	224.4	224.4	203.1	4.0
1991				12.5	42.9	42.9	41.5	4.3
1992	16	0.2	100.6	104.6	367.0	366.8	337.6	2.8
1993	20		127.4	137.8	494.6	491.6	250.3	2.7
1994	12	4.1	79.8	80.3	295.9	276.5	14.4	2.0
1995		1.7		9.0	34.3			2.7
1996								3.0
1997		5.2		5.0	20.3			3.0
Subtot	206	55.5	1145.9	1467.8	4082.8	4005.6	3450.3	

Appropriation: 1205 Military Construction, Navy

1983				0.4	0.8	0.8	0.8	4.9
1984								3.8
1985								3.4

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C/MH-53E, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY73 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1986				1.3	3.4	3.4	3.4	2.8
1987								2.7
1988				1.1	3.2	3.2	3.2	3.0
Subtot				2.8	7.4	7.4	7.4	
Navy	210	55.5	1145.9	1673.5	4441.3	4330.5	3769.7	

Appropriation: 0350 National Guard & Reserve Equipm,Defense

1991	10	1.2	68.9	83.2	285.0	281.9	262.3	4.3
1992	2	0.2	13.5	35.8	125.4	124.9	35.7	2.8
Subtot	12	1.4	82.4	119.0	410.4	406.8	298.0	
DoD	12	1.4	82.4	119.0	410.4	406.8	298.0	
Grand Total	222	56.9	1228.3	1792.5	4851.7	4737.3	4067.7	

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RD&E
Procurement

To Date
4/4
195/196

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

b. 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:

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

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C/MH-53E, December 31, 1994

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

Estimates revised 7 Dec 92 for CH-53 aircraft and 12 Dec 92 for the MH-53s from Naval Air Systems Command (AIR-524 Cost Analysis).

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&MN	36.2	4.2	5.1	---	45.5
DBOF	0.8	---	---	---	0.8
Total	37.0	4.2	5.1	---	46.3

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94-008

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

AS OF DATE: December 31, 1994

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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 LARRY COOPER

F-16 SYSTEM PROGRAM OFFICE

Assigned: September 1, 1994

MONAHAN HALL - 1981 MONAHAN WAY

AV 785-6151 COMM (513)255-6151

WPAFB, OH 45433-7205

CLEARED
FOR OPEN PUBLICATION

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0207133F

PROCUREMENT:

APPN 3010 ICN F016AD (Air Force)

MAR 9 1995 18

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

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), 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), and AN/ALE-47 Countermeasures Dispenser System

SAF/PAS

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OATSD (PA) DFOISR 95-C-041

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5. Related Programs (Cont'd):

(CMDS), Joint Direct Attack Munition (JDAM) 1/JDAM 3, On Board Electronic Warfare System Integration (OBEWS), Aircrew Simulator/Maintenance Trainer Updates, Tri-Service Standoff Attack Missile (TSSAM), AIM-9X, Sensor Fused Weapon (SFW)/Joint Stand Off Weapon (JSOW), Advanced Missile Warning, Hazardous Material Elimination, LANTIRN Laser Spot Tracker, Joint Programmable Fuze (JDAM 2)/CAS/AUR, Embedded GPS/Inertial Navigation System (INS).

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. 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 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. The USAF F-16 world wide fleet surpasses 2.4 Million flying hours and remains the safest single engine fighter in USAF history.

The 1992 Defense Authorization and Appropriation Acts reduced the F-16 production rate to the point F-16 multiyear contracting did not meet required cost savings. The remaining multiyear III efforts were converted to annual buys. 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. The 3000th F-16 was delivered for Egypt on 30 December 1991. As of October 1991 the F-16 Program Director has

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7a. Program Highlights (Cont'd):

responsibility for the total F-16 program, including the F-16 A/B program which was previously transferred to Ogden Air Logistics Center. The last Block 40 aircraft was delivered to Pope AFB, NC, February 1993.

During 1992, the Modular Mission Computer and Mid Life Update efforts were focused towards a core avionics architecture to take F-16 into the 21st century. The Close Air Support mission was redirected by the Air Force to the Block 40 aircraft. OSD agreed to an Air Force Plan to host the Close Air Support Mission on Block 30 and Block 40 F-16 C/Ds.

The F-16 Follow-On Development Test & Evaluation (DT&E) program completed DT&E for Block 50 Production Tape Two in Jan 93. F-16 A/B Follow-On Operational Test & Evaluation (FOT&E) was completed for Block 10/15 Tape Z1B in Apr 93. Additionally, the follow-on DT&E program completed DT&E for Block 40 Tape Four in May 1993.

As a result of a decision by the Chief of Staff of the Air Force (CSAF) to terminate the Advanced Tactical Airborne Reconnaissance System (ATARS), the F-16 Reconnaissance program was officially cancelled in December 1993.

The program office was significantly reorganized into Integrated Product and Process Teams to accommodate manpower reductions and implement Total Quality Concepts.

b. Significant Developments Since Last Report --

A total of 61 F-16 C/D aircraft were delivered to the USAF in 1994. The High Speed Anti-Radiation Mission (HARM) Targeting System (HTS) has completed production and fielding. Four operating locations have declared Initial Operating Capability (IOC) with the system. All bases have F-16 Block 50D/52D aircraft combined with the Advanced Launch Interface Computer (ALIC), HARM Block III/IV missiles and the HTS to provide a credible Suppression of Enemy Air Defense (SEAD) mission capability into the next century. Work has started on the HTS Operational Flight Program (OFF) tape upgrade, R5.0, that will address some improvements that were requested as a result of testing and initial feedback from the warfighter. The tape upgrade will be compatible with both F-16 50T3 and 50T4 updates when fielded. Also, a pre-Engineering Manufacturing Development (EMD) study is being performed at this time in support of a pod upgrade.

A Block 50T2 OT&E "Quicklook" was successfully completed by USAF Air Warfare Center in April 1994. Also, Block 40 Tape Four (40T4) FOT&E was completed in April 1994. FOT&E for Block 50 Tape Three (50T3) began at Nellis AFB in October 1994 and Block 50 (DT&E) was completed

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7b. Program Highlights (Cont'd):

on Production Tape Three (50T3) in October 1994. DT&E for F-16C Block 30 Software Capability Upgrade Tape Two (SCU-2) was completed in November 1994. SCU-2 is now starting FOT&E.

The following actions were initiated under the FALCON UP project: The first Block 40 aircraft was inducted in Jan 94 at Ogden Air Logistics Center, the FALCON UP program manager was reassigned from Wright-Patterson Air Force Base, OH to Ogden Air Logistics Center under Integrated Weapon System Management in March 1994, and the first option for the pre-block 40 aircraft was exercised in July 1994. As of 31 December 1994, 39 pre-block 40 and 39 Block 40/42 aircraft have completed Falcon Up.

During 1994 the F-16C/D Block 50/52 Mini-Block "A-C" Suppression of Enemy Air Defense ("SEAD") Mission retrofit modification program was started. Two prototypes and eight installations were completed.

This will be the final SAR since the program is more than 90% expended and delivered. Nunn-McCurdy Unit Cost reporting is not applicable beyond 31 December 1994.

The program is expected to satisfy all mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There is a cost breach (23.4% in Base Year FY1975 dollars) to the DAE approved Acquisition Program Baseline (APB) (dated 18 Mar 94) due to additional Research, Development, Test & Evaluation funds in the FY96 President's Budget to support Block 30 GPS Integration, CAS Block 30 development, and the Advanced Avionics Development efforts. A Program Deviation Report and Baseline Change Request were submitted to the Program Executive Officer on 13 February 1995. 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

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
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
Milestone IV CAS/BAI DAB	N/A	NOV 90	NOV 90
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	BAN 91	JAN 91
First Delivery Block 50	OCT 91	OCT 91	OCT 91
AIS Support for PSP	N/A	NOV 92	NOV 92
IAIS (Except Optical Test Bench)	N/A	FEB 93	FEB 93
First Delivery Improved Data Modem (IDM)	N/A	FEB 93	FEB 93
Final Block 40	N/A	NOV 92	FEB 93
Long Lead for Follow-On FY94 Buy	N/A	MAR 93	JUL 93
First Delivery Blk 50D	N/A	SEP 93	APR 93
F-16 Blk 50 'O' T.O.'s FOC	N/A	SEP 93	APR 93
IAIS (with full OTS)	N/A	JUL 94	JUL 94
Blk 40 Depot (Overall)	N/A	JUL 97	JUL 97
Blk 50 Depot (Overall)	N/A	SEP 00	SEP 00
Last Presently Programmed F-16 C/D Delivery	N/A	SEP 99	FEB 97

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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.

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.

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, directed F-16 aircraft procurement through FY95.

Date for "Long Lead for Follow-on buy" changed from Mar 93 to Jul 93 due to late release of Advance Buy funds.

Date for "First Delivery Blk 50" changed from Sep 93 to Apr 93 to accommodate field testing.

Date for "F-16 Blk 50 'O' T.O.'s FOC" changed from Sep 93 to Apr 93 due to a joint validation/verification effort between USAF and the contractor which compressed the delivery schedule.

Date for "Last presently programmed F-16 C/D Delivery" changed from May 01 to Feb 97 because PMD 6075(73) reduced the number of F-16s procured in FY94 from 24 to 12 and deleted procurement of F-16s in FY95.

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9c. Schedule (Cont'd):

c. Current Change Explanations -- None

d. References --

Development Estimate:

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

Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

10. Performance Characteristics:

a. Performance --	DE	Approved Program		Demonstrated Perf	Current Estimate
		Objective/Threshold			
F-16 C/D					
Sustained Turn Rate, Air to Air, Mid- Point of Air Superiority, Mission I, 30,000 ft, Max Power					
Mach 1.2 (Deg/sec)					
Block 25/30/32	N/A	5.1	/ 5.1	5.4	5.4
Mach 0.9 (Deg/sec)					
Block 25/30/32	N/A	7.3	/ 7.3	7.3	7.3
Sustained Turn Rate, Air to Air, Mid- Point of Air Superiority, Mission II, 30,000 ft, Max Power					
Mach 1.2 (Deg/sec)					
Block 40/42	N/A	4.7	/ 4.7	TBD	4.8
Block 50/52	N/A	5.2	/ 5.2	TBD	5.9
Mach 0.9 (Deg/sec)					
Block 40/42	N/A	6.6	/ 6.6	TBD	6.7
Block 50/52	N/A	6.7	/ 6.7	TBD	7.0
Sustained Turn Rate, Air-to-Air Loading, 30000 ft, Max power					
Mach 1.2 (deg/sec)					
Block 25/30/32	5.1	N/A	/ N/A	N/A	N/A
Mach 0.9 (deg/sec)					

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F-16 FIGHTING FALCON, December 31, 1994

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Block 25/30/32	7.3	N/A	/ N/A	N/A	N/A
Sustained Turn Rate, Air-to-Ground Loading, 200 ft, MIL power Mid-point of Lo-Lo-Lo-Lo Mission 500 KCAS (deg/sec)					
Block 25/30/32	6.6	6.6	/ 6.6	7.1	7.1
Block 40/42	N/A	5.3	/ 5.3		5.7
Block 50/52	N/A	8.5	/ 8.5	TBD	8.6
Total Mission Radius (NM), Air-to-Air, Air Superiority Mission I					
Block 25/30/32	N/A	480	/ 480	491	491
Total Mission Radius (NM), Air-to-Air, Air Superiority, Mission II					
Block 40/42	N/A	525	/ 525	TBD	564
Block 50/52	N/A	450	/ 450	TBD	589
Total Mission Radius (NM) Air-to-Air Loading					
Block 25/30/32	420	N/A	/ N/A	N/A	N/A
Air-to-Ground Loading Hi-Lo- Lo-Hi					
Block 25/30/32	465	465	/ 465	476	476
Block 40/42	N/A	320	/ 320	TBD	346
Block 50/52	N/A	400	/ 400	TBD	432
Air-to-Ground Loading Lo-Lo- Lo-Lo					
Block 25/30/32	295	295	/ 295	318	318
Block 40/42	N/A	240	/ 240	TBD	251

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate	
Block 50/52	N/A	275	/ 275	TBD	290	
Max Speed, Air-to-Ground Loading, 200 ft, MIL power Capability during Lo-Lo-Lo-Lo Mission With Weapons (KCAS)						
Block 25/30/32	565	565	/ 565	568	568	
Block 40/42	N/A	525	/ 525	TBD	539	
Block 50/52	N/A	540	/ 540	TBD	600	
Without Weapons (KCAS)						
Block 25/30/32	580	580	/ 580	592	592	
Block 40/42	N/A	540	/ 540	TBD	553	
Block 50/52	N/A	570	/ 570	TBD	600	
Combat Reliability Rate (Sorties flown divided by Ground aborts + Code 3 in-flight breaks)						
Block 25/30/32	N/A	7.5	/ 6.3	6.7	6.7	
Block 40/42	N/A	6.3	/ 6.3	14.5	14.5	
Block 50/52	N/A	7.3	/ 6.3	9.7	9.7	(Ch-1)
Fix Rate (% of breaks repaired within 8 hrs)						
Block 25/30/32	N/A	90	/ 85	86	86	
Block 40/42	N/A	90	/ 90	91.7	91.7	
Block 50/52	N/A	90	/ 85	86.5	86.5	(Ch-1)

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F-16 FIGHTING FALCON, December 31, 1994

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate	
Mobility						
Requirement						
(C-141						
equivalent						
loads to deploy						
1 squadron)						
Block 25/30/35	N/A	12	/ 14	14	14	
Block 40/42	N/A	12	/ 14	14	14	
Block 50/52	N/A	12	/ 14	TBD	14	
Manpower						
Requirement						
(manpower						
authoriza-						
tions per						
aircraft)						
Block 25/30/32	N/A	19	/ 21.6	21	21	
Block 40/42	N/A	22	/ 22	22	22	
Block 50/52	N/A	19	/ 22	TBD	19	
System						
Availability						
(measured by						
meeting or						
exceeding ACC						
standards as						
follows)						
Mission						
Capable (MC)						
(t)						
Block	85	85	/ 85	89	90	
25/30/32						
Block 40/42	N/A	85	/ 85	88.7	88.7	
Block 50/52	N/A	85	/ 85	88.7	88.7	(Ch-1)
Not Mission						
Capable/						
Maintenance						
(NMCM) (t)						
Block	N/A	8	/ 8	6.4	6.4	
25/30/32						
Block 40/42	N/A	8	/ 8	4.9	4.9	
Block 50/52	N/A	8	/ 8	4.7	4.7	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate	
Not Mission Capable/ Supply (NMCS) (%)						
Block 25/30/32	N/A	7	/ 7	6	6	
Block 40/42	N/A	7	/ 7	5.5	5.5	
Block 50/52	N/A	7	/ 7	5.7	5.7	(Ch-1)
Abort Rate (%)						
Block 25/30/32	N/A	5	/ 5	1.3	1.3	
Block 40/42	N/A	5	/ 5	1.3	1.3	
Block 50/52	N/A	5	/ 5	0.6	0.6	(Ch-1)
Mean Flight Time Between Maintenance Actions (MFTBMA) (hrs)						
Block 25/30/32	N/A	3.0	/ 3.0	3.5	3.5	
Block 40/42	N/A	3.0	/ 3.0	3.3	3.3	
Block 50/52	N/A	3.0	/ 3.0	3.7	3.7	(Ch-1)
Mean Flight Time Between Maintenance Actions (MFTBMA) (hrs)	3.0	N/A	/ N/A	TBD		
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	2/345	2/345	
No./wt. of Ammo	500/280	N/A	/ N/A	500/280	500/280	

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Air-to-Ground Mission				
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				
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.				
Mach 1.2 (deg/sec)	8.7	N/A / N/A	6.4	6.0
Max Attainable (Gs)	4.3	N/A / N/A	4.3	4.0
Mach 0.9 (deg/sec)	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				
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

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
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

The TBD in the Demonstrated Performance column indicates that the performance has not been demonstrated.

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 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 exceeds DCP goals for both Air-to-Air and Air-to-Ground in the Current Estimate and Demonstrated Performance.

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10b. Performance Characteristics (Cont'd):

(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 D0-56/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.

(9) New Acquisition Program Baseline dated, 18 Mar 94.

c. Current Change Explanations --

(Ch-1): Performance Demonstrated since last report.

d. References --

Development Estimate:

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

Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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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	1177.7	1453.6
Procurement	3798.2	15768.4	14568.5
Airframe	(1375.4)		(4811.9)
Engine	(911.3)		(2674.3)
Electronics	(539.6)		(2558.1)
Armament	(171.6)		(457.0)
Sys/Proj Mgt	(33.8)		(538.0)
Total Flyaway	(3031.7)		(11039.3)
Other Weapon System			(119.7)
Peculiar Support	(435.2)		(2172.6)
Initial Spares	(331.3)		(1236.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 75 Base-Year \$	4376.8	16946.1	16022.1
Escalation	1677.7	25021.7	22426.1
Development (RDT&E)	(80.5)	(841.9)	(1467.8)
Procurement	(1597.2)	(24179.8)	(20958.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	6054.5	41967.8	38448.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	650	2333	2201
Total	650	2333	2201

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 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.

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

- (6) 174 @ \$4,585.4M (Then Year) for Egypt.
- (7) 210 @ \$4,458.7M (Then Year) for Israel.
- (8) 40 @ \$784.1M (Then Year) for Korea.
- (9) 120 @ \$2,047.4M (Then Year) for Korean Fighter Program (KFP).
- (10) 68 @ \$1,747.8M (Then Year) for Pakistan.
- (11) 240 @ \$6,882.3M (Then Year) for Turkey.
- (12) 24 @ \$468.2M (Then Year) for Venezuela.
- (13) 26 @ \$843.0M (Then Year) for Singapore.
- (14) 36 @ \$948.9M (Then Year) for Thailand.
- (15) 12 @ \$292.0M (Then Year) for Indonesia.
- (16) 12 @ \$321.0M (Then Year) for Bahrain.
- (17) 20 @ \$391.8M (Then Year) for Portugal.
- (18) 150 @ \$5,768.1M (Then Year) for Taiwan.
- (19) 301 Kits @ \$1,845.3M (Then Year) for EPG F-16 Mid-Life Update
- (20) 40 @ \$1,399.7M (Then Year) for Greece

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

d. Nuclear Costs -- None

e. References --

Development Estimate:

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

Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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12. Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (MAR 94 APB)	Percent Change
a. Total Program			
(1) Cost (BY75\$)	16022.1	16946.1	
(2) Quantity	2201	2333	
(3) Unit Cost	7.279	7.264	0.218
b. Procurement			
(1) Cost (BY75\$)	14568.5	15768.4	
(2) Quantity	2201	2333	
(3) Unit Cost	6.619	6.759	-2.069

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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	+13.7	+27.9	-	+41.6
Quantity	-	+14052.9	-	+14052.9
Schedule	+0.1	+2356.1	-	+2356.2
Engineering	+1375.8	+8519.5	-	+9895.3
Estimating	+9.4	-1929.6	-	-1920.2
Other	+20.6	+35.8	-	+56.4
Support	+154.9	+7184.4	-	+7339.3
Subtotal	+1574.5	+30247.0	-	+31821.5
Current Changes:				
Economic	-1.6	-15.2	-	-16.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	626.3	-67.6	-	+558.7
Estimating	27.1	60.9	-	+88.0
Other	-	-	-	-
Support	36.0	-93.7	-	-57.7
Subtotal	+687.8	-115.6	-	+572.2
Total Changes	+2262.3	+30131.4	-	+32393.7
Current Estimate	2921.4	35526.8	-	38448.2

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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	-	+5742.1	-	+5742.1
Schedule	-	+206.8	-	+206.8
Engineering	+567.1	+2929.5	-	+3496.6
Estimating	-19.8	-890.8	-	-910.6
Other	+15.5	+24.6	-	+40.1
Support	+101.0	+2792.9	-	+2893.9
Subtotal	+663.8	+10805.1	-	+11468.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	193.9	-18.9	-	+175.0
Estimating	5.8	14.3	-	+20.1
Other	-	-	-	-
Support	11.5	-30.2	-	-18.7
Subtotal	+211.2	-34.8	-	+176.4
Total Changes	+875.0	+10770.3	-	+11645.3
Current Estimate	1453.6	14568.5	-	16022.1

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, a Close Air Support/Battlefield Air Interdiction (CAS/BAI) retrofit kit, and LANTIRN Laser Spot Tracker (LST) integration, probe and drogue aerial refueling, and software development and associated flight test support transferred from procurement appropriation.

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

Estimating: Refinement of estimates and adjustment for current and prior year escalation.

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

Support: Development of AIS.

Procurement

Economic: Revised escalation indices and economic impact of program content reductions.

Quantity: Addition of 1551 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 RWR), identification of Operational Flight Program (OFP) updates and associated qualification testing support, impact of quantity changes, and transfer of OFP updates and associated qualification test support to the appropriate appropriation (3600).

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, adjustment for prior year escalation, and addition of tail-up and USAF production line close out costs due to discontinued USAF production.

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, transfer of Interim Contractor Support (ICS) costs from O&M and inclusion of Initial Common Support Equipment (ICSE) to reflect total weapon system support costs, and transfer of post-production depot level support Equipment and Technical Order Maintenance Cost to the O&M appropriation to reflect their contribution as sustainment costs.

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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	-1.6
Deletion of Probe & Drogue Aerial Refueling Development task. (Engineering)	-2.4	-7.1
Identification of Avionics Upgrades (Infrared Tracking System, Synthetic Aperture Radar, and Advanced IFF) and associated software development and Flight testing (Engineering)	+110.8	+375.1
Development of a CAS capability for Blk 30 F-16C/D aircraft. (Engineering)	+21.9	+69.3
Integration of the Global Positioning System into Blk 30 F-16C/D aircraft. (Engineering)	+11.1	+30.7
Integration of the Joint Direct Attack Munition into F-16 aircraft. (Engineering)	+17.1	+55.2
Transfer of O&M funding previously identified for software development and associated flight testing to the RDT&E appropriation (Engineering)	+27.7	+78.6
Identification of a special projects laboratory for newly identified developmental tasks (Engineering)	+7.7	+24.5
Revised estimate for software development and associated flight testing (Estimating)	+13.7	+45.8
Re-estimate of other development tasks. (Estimating)	-7.7	-18.7
Adjustment for current and prior year escalation. (Estimating)	-0.2	--
Identification of weapon system trainer and peculiar support development to support newly identified development tasks. (Support)	+11.5	+36.0
RDT&E Subtotal	+211.2	+687.8

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

	(Dollars in Millions)	
	Base-Year	Then-Year
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-15.2
Transfer of budget year and outyear COD kit installation labor cost to the F-16 modification (BA07) program to identify their contributions as Post Production Sustainment costs. (Engineering)	-18.9	-67.6
Re-estimate of USAF production line close out costs. (Estimating)	-4.0	-11.6
Revised estimate of system management costs through completion of currently directed USAF F-16 deliveries in FY97. (Estimating)	+32.6	+117.5
Re-estimate of current and prior year flyway costs (Estimating)	-17.7	-54.8
Adjustment for current and prior year escalation, (flyaway elements). (Estimating)	+3.4	+9.8
Adjustment for current and prior year escalation, (support elements). (Support)	+0.8	+2.9
Re-estimate of peculiar support costs (Support)	-39.9	-132.4
Re-estimate of initial spares requirements. (Support)	+8.9	+35.8
Procurement Subtotal	-34.8	-115.6

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
9.315	0.011	-0.180	1.071	4.750	-0.832	0.026	3.308	8.154	17.469

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

a. RDT&E --

F-16 A/B MID-LIFE UPDATE:

Lockheed Fort Worth Co., Fort Worth, TX

F33657-90-C-2233, CPIF

Award: March 31, 1990

Definitized: March 3, 1992

Current Contract Price			Initial Contract Price	
Target	Ceiling	Qty	Target	Ceiling
\$353.7	N/A	0	\$300.5	N/A

Estimated Price At Completion	
Contractor	Program Manager
\$362.2	\$372.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$8.9	\$-11.4
Net Change	\$8.9	\$-11.4

Explanation of Change:

This is the first submission of this contract in the SAR. The unfavorable cost and schedule variance growth is due to complexity of APX-113 design change from block 30 to block 50 software baseline, engineering changes, late GFE, revised Forward Pricing Rates (R4493) and miscellaneous minor changes such as G&A and overhead rates.

MOD MISSION COMPUTER:

Lockheed Fort Worth Co, Fort Worth, TX

F33657-89-C-0009, CPIF

Award: January 5, 1992

Definitized: April 30, 1994

Current Contract Price			Initial Contract Price	
Target	Ceiling	Qty	Target	Ceiling
\$240.9	N/A	0	\$220.1	N/A

Estimated Price At Completion	
Contractor	Program Manager
\$244.5	\$254.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$-7.0	\$-6.0
Net Change	\$-7.0	\$-6.0

Explanation of Change:

This is the first submission of this contract in the SAR. The unfavorable cost and schedule variance growth is due to a late start in Tape 2 coding phase, overhead rates changes, and revised direct labor and overhead forward pricing rates (R4193).

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15. Contract Information (Cont'd):

b. Procurement --

F110 IP ENGINES:

General Electric Corp, Evendale, OH
F33657-88-C-2189, FFP
Award: February 27, 1989
Definitized: February 27, 1989

Initial Contract Price		
Target	Ceiling	Qty
\$96.9	N/A	8

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1055.0	N/A	224	\$1055.0	\$1055.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change: None.

Cost and schedule variance reporting is not required on firm-fixed-price contracts.

BLOCK 50 INTEGRATION:

Lockheed Fort Worth Co, Fort Worth, TX
F33657-89-C-0009, FPIF
Award: December 1, 1988
Definitized: May 30, 1990

Initial Contract Price		
Target	Ceiling	Qty
\$76.4	\$80.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$230.7	\$247.3	0	\$227.3	\$230.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-17.0	\$-0.7
Cumulative Variances To Date	\$-14.9	\$-8.1
Net Change	\$2.1	\$-7.4

Explanation of Change:

The increase in target price \$9.9M and ceiling price \$11.2M was due to the repricing of the following: CCP9960 Software Security Requirements; CCP9962 Classified; A Special Program; CCP9905C12 Reschedule CCP9905 and 05C8 Electronics Warfare Suite Integration Testing; ECP1915R1C1 Classified; CCP9966 Classified; ECP2000 F/A 16 Close Air Support, and newly authorized task CCP9967C1 Additional Production Risk Reduction Articles.

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15. Contract Information (Cont'd):

The favorable cost variance decrease of \$2.1M and unfavorable schedule variance increase of \$7.4M were due to CCP 9934 Project R Classified in procurement/equipment, miscellaneous minor changes such as favorable G&A and overhead rate changes, and several budget adjustments.

The increase in the contractor's estimated price at completion \$5.9M was due to the repricing of the above CCPs and re-timephasing of cost-to-complete effort for engineering tasks. The decrease in the Program Manager's estimated price at completion (\$4.7M) is due to the contractor's demonstrated efficiency for the remainder of the contract. There is no adverse impact to the overall program. This program is budgeted to the program manager's estimate at completion.

F-16 FY92 PRODUCTION:			Initial Contract Price	
	Target	Ceiling	Qty	
Lockheed Fort Worth Co, Fort Worth, TX				
F33657-88-C-0037, PPIF	\$479.1	\$596.6	40	
Award: June 21, 1989				
Definitized: December 3, 1993				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$735.1	\$808.8	48	\$787.4	\$800.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$-96.5	\$-14.3
Net Change	\$-96.5	\$-14.3

Explanation of Change:

The increase in target price \$256.0M and ceiling price \$212.2M was due to new tasks: CCP5824 Industrial Technology Modernization; CCP6523 F-16 Depot Support Equipment and Applicable Technical Orders; ECP1945 Modify Boresight Fixtures, Universal HUD, Group I Rate Savings Clause, and 1192 Swing Clause and repricing of: CCP4724-1R1C3 Time Oriented Task for Major Aircraft Programs; CCP4890 Demonstration of an Overboard Oxygen Generating System (OBOGS); ECP2121 Improved Main Fuel Shut-off Value; CCP4836 Smoothing of F-16 Production and Delivery Schedules; CCP4724-7 MYIII ECP Swing Clause; CCP4724-11R1 Warranties for MYIII; CCP4873 Tooling Maintenance; CCP4833 Single Contract Line Item Tooling Allocation Tables; ECP1649R2 Incorporation of Block 50 Configuration Changes; CCP4724-24 USAF MYIII Aircraft and ECP Baseline Reversionary Adjustments; ECP 1745 Advanced Missile Remote Interface Reliability and CCP47248R1 F-16 Air Combat Fighter Intermediate Shops(AIS).

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15. Contract Information (Cont'd):

The unfavorable cost variance increase of \$96.5M was due to a declared overrun in the Airframe WBS budget and actual cost adjustments in Procurement because of MRP problems; job task inefficiencies in Tooling/tool engineering; a re-evaluation of cost impacts from CCP4833 Single Contract Line Item Tooling Allocation Tables and associated changes in G&A, overhead, and fringe benefits.

The unfavorable schedule variance increase of \$14.3M was due to late deliveries by various subsystem suppliers; routine budget adjustments in Procurement; job task inefficiencies in Tooling/Tool Engineering, and associated changes in G&A, overhead, and fringe benefits.

The increase in the contractor's estimated price at completion \$312.5M was due to; re-evaluation and repricing of CCP4833 Single Contract Line Item Tooling Allocation Tables, various CCPs/ECPs, and associated changes in G&A, overhead, and fringe benefits.

The increase in the Program Manager's estimated price at completion \$321.3M was due to CCP4833 Single Contract Line Item Tooling Allocation Tables; MRP adjustment as well as associated changes in G&A, overhead, and fringe benefits. There is no adverse impact to the overall program. This program is budgeted to the PM's estimate-at-completion.

F-16 FY93 Production:			Initial Contract Price		
			Target	Ceiling	Qty
Lockheed Company, Fort Worth, TX					
F33657-88-C-0037, FPIF			\$256.8	\$321.0	24
Award: June 21, 1989					
Definitized: December 3, 1993					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$335.0	\$366.2	24	\$346.6	\$338.1	
			Cost Variance	Schedule Variance	
Previous Cumulative Variances			\$0.0	\$0.0	
Cumulative Variances To Date			\$-3.2	\$-5.4	
Net Change			\$-3.2	\$-5.4	

Explanation of Change:

The increase in target price \$78.2M and ceiling price \$45.2M was due to new task; ECP 1987 - Fuel Shelf Web crack at wing carry through bulkheads, ECP 2102R1 - Production incorporation of block 40 initiatives-DFLCC Software update, Group 1 rate savings clause currency fluctuation and ECP 2038 - Revised inadequate thread relief fasteners, and repriced task; CCP4853 F-16 sustaining effort,

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15. Contract Information (Cont'd):

CCP4724-1RC3 - Time oriented tasks for major airframe programs, CCP4724-7, MYIII ECP Swing clause, CCP4724-11R1 warranties for MYIII, ECP1649R2C2 Production incorporation of upgrade programmable display generator, ECP1867 - Production incorporation of VH FM antenna, CCP4877 Tooling maintenance single contract line item tooling allocation tables, ECP1677R1 - integration of positive pressure breathing and miscellaneous others.

The unfavorable cost variance increase of \$3.2M was due to cost-to-complete analysis of actual costs, open orders and program status.

The unfavorable schedule variance increase of \$5.4M was due to late delivery of items by various procurement/subsystem suppliers and routine budget adjustments.

The increase in the contractor's estimated price at completion \$89.8M was due to the re-evaluation of Manufacturing and tooling cost-to-complete effort and associated changes in G&A, overhead, and fringe benefits.

The increase in the Program Manager's estimated price at completion \$81.3 was due to MRP adjustments as well as associated changes in G&A, overhead, and fringe benefits. There is no adverse impact to the overall program. This program is budgeted to the program manager's estimate at completion.

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: 96.1% (\$36953.3 / \$38448.2)

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

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

Appropriation	Prior Years (FY75-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	1869.4	175.6	152.8	723.6	2921.4
Procurement	35083.9	201.1	91.2	150.6	35526.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	36953.3	376.7	244.0	874.2	38448.2

c. Annual Summary --

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

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
1977				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
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

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F-16 FIGHTING FALCON, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

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				8.5	19.7	19.7	19.7	3.0
1989				10.0	24.3	24.3	24.1	4.2
1990				6.6	16.6	16.6	16.0	4.0
1991				10.0	26.0	26.0	24.5	4.3
1992				54.5	145.5	145.5	144.2	2.8
1993				43.6	119.1	119.1	80.1	2.7
1994				21.4	59.7	51.8	8.4	2.0
1995				46.7	134.2	2.5	0.5	2.7
1996				59.3	175.6			3.0
1997				50.1	152.8			3.0
1998				43.1	135.3			3.0
1999				40.0	129.3			3.0
2000				57.6	191.7			3.0

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2001				77.9	267.3			3.0
Subtot				1453.6	2921.4	1729.8	1641.8	

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	103.5	750.9	1088.7	2891.7	2891.7	2891.7	2.7
1988	180	48.8	758.3	964.8	2688.9	2688.9	2640.8	3.0
1989	180	119.3	798.9	1103.7	3177.5	3177.5	3133.7	4.2

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Years	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

1990	150	53.6	712.3	1049.7	3118.8	3118.8	3058.9	4.0
1991	108	69.9	557.7	663.0	2049.2	2049.2	1913.2	4.3
1992	48	32.2	304.5	374.3	1184.7	1184.7	784.6	2.8
1993	24	14.2	170.3	216.0	696.8	525.6	247.6	2.7
1994	12	27.2	110.2	136.3	450.5	202.8	40.1	2.5
1995		12.7		24.3	82.8	0.8		2.8
1996		28.0		57.4	201.1			2.9
1997		19.2		25.3	91.2			3.0
1998		1.8		11.0	40.8			3.0
1999		1.7		11.9	45.6			3.0
2000		1.7		8.4	33.3			
2001		1.6		7.6	30.9			
Subtot	2201	1306.2	9733.1	14568.5	35526.8	34583.0	33453.6	
Grand Total	2201	1306.2	9733.1	16022.1	38448.2	36312.8	35095.4	

Obligations and expenditures reflect program office records as of 31 December 1994.

Note: Prior year numbers for program Totals (TY\$) have been adjusted to reflect actuals.

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F-16 FIGHTING FALCON, December 31, 1994

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RDT&E

To Date

Procurement

8/8

2156/2158

b. 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 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 Maintenance	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

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F-16 FIGHTING FALCON, December 31, 1994

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

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

Funding	FY1995 & Prior	FY1996	FY1997	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

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

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
Cover Sheet Information		1
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Production Rate Data		25
Operating and Support Costs		25

- (U) Designation and Nomenclature (Preferred Name):
F/A-18 C/D Naval Strike Fighter (HORNET)
- (U) DoD Component: Navy
- (U) Responsible Office and Telephone Number:
F/A-18 PROGRAM OFFICE CAPT JOE DYER
TACTICAL AIRCRAFT PROGRAM Assigned: January 14, 1994
WASHINGTON, DC 20361-1265 AV 222-7954 COMM (202) 692-7954

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

RDT&E:
PE 0204136N, 0603261N (Shared), 0604263N
PROCUREMENT:
APPN 1506 ICN 014400 (Navy)
APPN 1506 ICN 052500 (Navy)
APPN 1506 ICN 060510 (Navy)

**CLEARED
FOR DISSEMINATION**

MAR 28 1995 11

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

~~Classified by: [REDACTED]~~
~~Declassify on: [REDACTED]~~
~~Downgrade to: [REDACTED]~~

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

MILCON:
PE P074

5. (U) Related Programs:

AMRAAM, ALR-67, LASER & IR Maverick, NACES (Ejection Seat), ALQ-126B, HARM, HARPOON, SPARROW/SIDEWINDER, SLAM, RECCE(ATARS), F404 Engine, Oxygen Generating System, AYK-14 (XN-8), ASN-130/139, ARC-182/210, BRU-32, Global Positioning System (GPS), JDAM, JSOW, SLAM, F/A-18 E/F.

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, close air support, and suppression of enemy air defenses.

Sixty two-seat USMC F/A-18 D's (Lot 13 to Lot 21) 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. The Radar Upgrade (RUG), redesignated the APG-73 program began 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 multi-mission 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.

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

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

contains provisions for the Airborne Self-Protection Jammer (ASPJ) or other equipment approved by OSD, 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 were 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 multi-purpose color display.

Starting with October 1992 deliveries, the F/A-18 C/D aircraft is equipped with the F404-GE-402 Enhanced Performance Engine. These Lot XV aircraft also included the XN-8 mission computer.

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

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 software upgrade, 91C Operational Flight Program incorporating multi-source integration, was released to the fleet. The engineering and development phase for the AN/APG-73 upgraded radar was completed and Operational testing began in December 1993. A Ground Proximity Warning System began development. The Advanced Tactical Air Reconnaissance System was successfully demonstrated on the F/A-18D. The AN/AAS-38A Targeting FLIR, with laser installed, delivered to the fleet. The AN/AAS-38B, incorporating laser spot tracker and advanced controller processor in targeting FLIR was placed under contract for FY95 deliveries.

The F/A-18 program office has taken the lead in development of the Tactical Reconnaissance programs and now includes the RDT&E funding for these two programs in the F/A-18 C/D SAR.

The Operational Assessment for the AN/APG-73 Radar Upgrade was completed in February 1994. The radar was found to be potentially operationally effective and potentially operationally suitable. F/A-18 C/D aircraft delivered beginning in June 1994 came equipped with this radar. Modifications to the LAU-115A, designed to eliminate deformation or failure of the forward missile launch lug/LAU-115A launcher interface due to high lateral load transients were tested successfully. The modifications are being made to fleet LAU-115s enabling resumption of flight operations with the wing-carried SPARROW.

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

The Sierracin Advanced Birdstrike windscreens successfully completed field carrier landing practice, gunfire effects, P-static checks, and optical evaluations enabling approval of ECP-507. The ARC-210 radio background noise problem identified during F/A-18 production acceptance flights in St. Louis was solved and corrected. This enabled fleet production release of Hornets equipped with ARC-210 radios. The engine afterburner flameholder was redesigned by the contractor, improving structural durability. Navy flight testing showed that the new design did not degrade light-off capability and improved durability by 66%. Advanced Tactical Air Reconnaissance System (ATARS) contract for Preliminary Operational Capability (POC) was signed 28 June 1994. POC is scheduled for October 1996; IOC is scheduled for October 1998.

Foreign military sales production continues for Finland, Switzerland, and Malaysia. Norway, Austria, Saudi Arabia, Qatar, and the United Arab Emirates have shown interest in acquiring the F/A-18.

b. (U) Significant Developments Since Last Report --
This is the final SAR because deliveries are over 90% complete. The F/A-18 C/D quantities have been reduced by 36 aircraft since the last SAR report.

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 are no Nunn-McCurdy unit cost breaches. There are no breaches to the Acquisition Program Baseline Agreement dated 23 January 1995.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	NOV 75	NOV 75	NOV 75
General Electric (Engine)			
Milestone II (DSARC)	DEC 75	DEC 75	DEC 75

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

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Navy Support Date	N/A	OCT 83	OCT 83
DSARC Principals Review	N/A	MAR 85	MAR 85
RADAR UPGRADE (RUG)			
Milestone II	N/A	JUL 89	JUL 89
Milestone IIIA1	N/A	JUN 91	JUN 91
Milestone IIIA2	N/A	MAR 93	AUG 93
LRIP III Program Review	N/A	JAN 95	JAN 95(Ch-1)
Milestone III (FRP)	N/A	JUN 96	JUN 96

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

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

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 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.

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

Milestone IIIA2 was changed from May 93 to Aug 93 and has been completed. Radar Upgrade milestones have been updated to reflect the new 5000.2 guidelines. Milestone IIIB1 (May 94) has been renamed LRIP III Program Review (Jun 94) and delayed due to preparation for the RUG Phase II Program Review. Milestone IIIB2 (Mar 95) has been renamed Milestone III (FRP) (Aug 95) and delayed due to a requirement for a second OPEVAL scheduled for completion in April 95. The OPEVAL test report is required to support Milestone III.

Radar Upgrade (RUG) Milestone III has been updated to June 96. The

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

RUG program was scheduled to complete software development in August 94, start OPEVAL (OT-IIC) in January 95, leading to Milestone III in August 95. Software translation/development of two software operational programs will take 40 months instead of the planned 33 months. This allows sufficient time for the completion of all testing.

c. (U) Current Change Explanations --

(Ch-1): The LRIP III Program Review was rescheduled from Nov 94 to Jan 95 to allow the final preparations for the review to be completed.

d. (U) References --

(U) Development Estimate:

DCP #141 dated 18 November 1976; OSD Program Review Memorandum, 17 March 1983

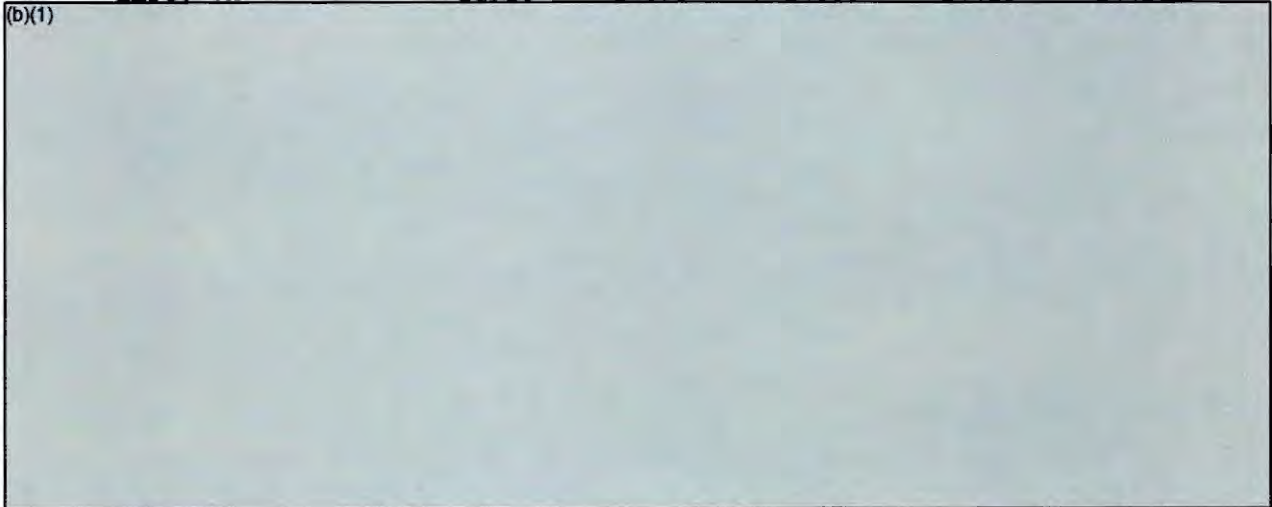
(U) Approved Program:

NAE Approved Acquisition Program Baseline dated January 23, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program			Demon-	Current
	<u>DE</u>	<u>Objective/Threshold</u>		<u>strated Perf</u>	<u>Estimate</u>
Weight (lbs)					
Empty VF	21649	24395	/ 24883	24413	24426
Empty VA	21720	24395	/ 24883	24413	24426

(b)(1)



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10b

(b)(1)

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

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 January 23, 1995.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1437.7	1948.6	1960.6
Procurement	6560.9	13542.3	11984.4
Airframe	(3599.6)		(6310.1)
Engines	(1059.7)		(1391.8)
Avionics	(198.8)		(294.8)
Arms/Other GFE	(61.3)		(1381.7)
Total Flyaway	(4919.4)		(9378.4)
Total Other Wpn Sys	(517.5)		(921.5)
Peculiar Support	(610.3)		(1066.5)
Initial Spares	(513.7)		(618.0)
Construction (MILCON)	18.0	21.6	21.4
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 75 Base-Year \$	8016.6	15512.5	13966.4
Escalation	4858.7	27431.6	22817.0
Development (RDT&E)	(396.7)	(1188.7)	(1287.7)
Procurement	(4451.7)	(26223.4)	(21511.3)
Construction (MILCON)	(10.3)	(19.5)	(18.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	12875.3	42944.1	36783.4

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	11	11	11
Procurement	800	1157	1015
Total	811	1168	1026

Quantities based on FY95 President's Budget Submission.

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

Aircraft Qty	Program Cost	
Spain	72	\$2.451B
Australia	75	\$2.862B
Kuwait	40	\$1.992B
Finland	64	\$3.200B
Switzerland	34	\$1.705B
Malaysia	8	\$0.664M

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 January 23, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY75\$)	13966.4	15512.5	
(2) Quantity	1026	1168	
(3) Unit Cost	13.612	13.281	2.494

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY75\$)	11984.4	13542.3	
(2) Quantity	1015	1157	
(3) Unit Cost	11.807	11.705	0.877

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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	1834.4	11012.6	28.3	12875.3
Previous Changes:				
Economic	+191.1	+4613.0	-	+4804.1
Quantity	-	+897.7	-	+897.7
Schedule	+14.6	+7565.6	-0.6	+7579.6
Engineering	+369.2	+2739.0	+2.4	+3110.6
Estimating	+763.7	+4814.0	+10.7	+5588.4
Other	+6.5	-	-	+6.5
Support	+3.0	+4057.5	-1.4	+4059.1
Subtotal	+1348.1	+24686.8	+11.1	+26046.0
Current Changes:				
Economic	-2.6	-367.2	-	-369.8
Quantity	-	-564.6	-	-564.6
Schedule	1.8	-206.8	-	-205.0
Engineering	55.4	-155.7	-	-100.3
Estimating	11.2	-653.6	-	-642.4
Other	-	-	-	-
Support	-	-255.8	-	-255.8
Subtotal	+65.8	-2203.7	-	-2137.9
Total Changes	+1413.9	+22483.1	+11.1	+23908.1
Current Estimate	3248.3	33495.7	39.4	36783.4

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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	-	+1287.7	-	+1287.7
Schedule	+9.4	+1056.3	-0.9	+1064.8
Engineering	+150.0	+824.3	+1.0	+975.3
Estimating	+335.5	+1774.6	+3.8	+2113.9
Other	+4.5	-	-	+4.5
Support	+1.5	+1039.7	-0.5	+1040.7
Subtotal	+500.9	+5982.6	+3.4	+6486.9
Current Changes:				
Quantity	-	-170.8	-	-170.8
Schedule	0.2	-36.2	-	-36.0
Engineering	17.8	-55.0	-	-37.2
Estimating	4.0	-221.9	-	-217.9
Other	-	-	-	-
Support	-	-75.2	-	-75.2
Subtotal	+22.0	-559.1	-	-537.1
Total Changes	+522.9	+5423.5	+3.4	+5949.8
Current Estimate	1960.6	11984.4	21.4	13966.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates. Economic adjustment for negative program change.

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. Addition of RUG Phase II program and a second OPEVAL associated with RUG Phase I. Addition of funding for PIDS development.

Estimating: Revisions for budget changes, flight test costs,

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

equipment price analysis, and reprogramming of unobligated balances. Revised to reflect prior year actuals and the current Radar Upgrade (RUG) program. Adjustment for Current and Prior inflation. Addition of F/A-18 C/D Improvements line not previously reported. Addition of Tactical Reconnaissance program funding to the F/A-18 C/D program. Update of FY84 program funding to reflect actuals. Refinement of a prior current estimate.

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

Support: Additional operational test time support.

Procurement

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

Quantity: 566 additional aircraft; change in annual procurement. Reduction from 1366 to 1157. Decrease production quantity by 82 aircraft FY's 93-98. Reduced quantity from 1075 to 1051.

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. Allocation due to quantity decrease. Fluctuations in production rates and final production year. Decrease in annual procurement buy profile in FY95-96.

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. Implementation of RUG and the AN/AYK-14 mission computer upgrade. Incorporation of

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

VEQP-381 Laser Spot Tracker. Deletion of LDT/SC. Cancellation of ASPJ program. Addition of SMS Upgrade, PID, GPS, and CVRS systems. Quantity allocation resulting from decrease in FY95-96 procurement.

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 customer, and McDonnell Douglas' decreased business base. 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. Adjustment for current & prior inflation. Quantity allocation due to decreased procurement in FY95-96.

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. Adjusted allocation of support due to change in aircraft procurement schedule and decreased quantities.

MILCON

Economic: Revised escalation rates. Adjustment for current and prior inflation.

Schedule: Facility restructuring to meet changed deliveries.

Engineering: Rinse Unit at MCAS Kaneohe Bay, Hawaii. Engine Test Cell at Cecil Field and Battery Shop at NAS Lemoore. Engine Test Cell at Cecil Field deleted due to Congressional recision.

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

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)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.6
Revised to reflect adjusted Radar Upgrade Phase II schedule. (Schedule)	+0.2	+1.8
Addition of Positive Identification System (PIDS) effort. (Engineering)	+17.8	+55.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.6	+1.4
Revised to reflect net budget adjustments resulting from POM 96. (Estimating)	+3.4	+9.8
RDT&E Subtotal	+22.0	+65.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-53.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	-314.1
Total Variance associated with decrease of 36 aircraft.	-295.9	-977.8
- Quantity Allocation resulting from change in procurement of 36 aircraft. (Quantity)	-170.8	-564.6
- Schedule Allocation resulting from change in procurement of 36 aircraft. (Schedule)	-36.2	-206.8
- Engineering Allocation resulting from change in 36 aircraft. (Engineering)	-28.2	-74.9
- Estimating Allocation resulting from change in 36 aircraft. (Estimating)	-60.7	-131.6
Deletion of Radar Upgrade Phase II program. (Engineering)	-8.0	-26.1
Deletion of ATARS (Engineering)	-18.8	-54.7

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Estimating)	+9.3	+27.9
Changes in direct labor rates and overhead at Northrop due to decreased business base, configuration changes, and decreased budget amounts. (Estimating)	-170.5	-549.9
Adjustment for Current & Prior Inflation. (Support)	+1.8	+6.2
Reduction in support due to decreased budget controls. (Support)	-77.0	-262.0
Procurement Subtotal	-559.1	-2203.7

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
15.876	4.322	-3.003	7.188	2.934	4.821	0.006	3.707	19.975	35.851

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

a. (U) Procurement --	Initial Contract Price		
(U) <u>FY88-95 PROD ENGINES:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL ELECTRIC COMPANY, LYNN, MA			
N00019-86-C-0247, FFP	\$226.8	N/A	141
Award: April 17, 1987			
Definitized: September 30, 1993			
Current Contract Price	Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>
\$1672.9	N/A	834	
			<u>Program Manager</u>
			\$1681.8

Explanation of Change:

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

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

(U) <u>FY 93 PROD AIRFRAME:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
MCDONNELL DOUGLAS, ST LOUIS, MO	\$1109.2	\$0.0	36		
N00019-92-C-0006, FFP					
Award: January 31, 1992					
Definitized: December 16, 1993					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1092.2	\$0.0	36	\$1109.2	\$1109.2

Explanation of Change:

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

(U) <u>FY 94 PROD AIRFRAME:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
MCDONNELL DOUGLAS, ST LOUIS, MO	\$1062.2	\$0.0	36		
N00019-93-C-0033, FFP					
Award: March 30, 1993					
Definitized: N/A					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1057.9	\$0.0	36	\$1057.9	\$1057.9

Explanation of Change:

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

(U) <u>FY 95 PROD AIRFRAMES:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
MCDONNELL DOUGLAS, ST. LOUIS, MO	\$779.0	\$0.0	24		
N00019-94-C-0084, FFP					
Award: N/A					
Definitized: N/A					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$779.0	\$0.0	24	\$779.0	\$779.0

Explanation of Change:

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

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

a. (U) Program Status --

(1) Percent Program Completed: 80.8% (21 yrs/26 yrs)

(2) Percent Program Cost Appropriated: 97.5% (\$35867.5 / \$36783.4)

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

<u>Appropriation</u>	<u>Prior Years (FY75-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2000)</u>	<u>Total</u>
RDT&E	2996.7	91.1	77.8	82.7	3248.3
Procurement	32831.4	614.8	49.5	-	33495.7
MILCON	39.4	-	-	-	39.4
O&M	-	-	-	-	-
Total	35867.5	705.9	127.3	82.7	36783.4

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY75 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obli- gated</u>	<u>Ex- pended</u>	

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

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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: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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				8.5	17.6	17.6	17.5	3.8
1985				14.4	30.7	30.7	30.5	3.4
1986				25.2	55.5	55.5	54.0	2.8
1987				13.2	29.8	29.8	29.3	2.7
1988				5.9	13.8	13.8	13.4	3.0
1989				4.1	9.9	9.9	9.5	4.2
1990				12.9	32.7	32.7	31.8	4.0
1991				29.0	76.2	76.2	75.3	4.3
1992				25.3	68.6	68.6	67.5	2.8
1993				26.4	73.3	68.5	63.9	2.7
1994				30.6	86.8	56.9	24.6	2.0
1995				37.0	108.0	5.1	0.6	2.7
1996				30.3	91.1			3.0
1997				25.1	77.8			3.0

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1998				15.5	49.3			3.0
1999				9.5	31.1			3.0
2000				0.7	2.3			
Subtot	11			1960.6	3248.3	2859.1	2806.7	

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.

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
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	117.8	546.7	791.9	2275.1	2275.1	2275.1	2.7

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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: 1506 Aircraft Procurement, Navy (Cont'd)

1988	84	124.4	545.6	813.2	2437.8	2437.8	2437.8	3.0
1989	84	114.9	547.8	796.0	2481.7	2481.7	2446.7	4.2
1990	66	97.9	419.8	616.2	1988.1	1978.9	1948.5	4.0
1991	48	96.3	337.4	541.2	1797.9	1795.7	1787.0	4.3
1992	48	112.6	372.5	617.0	2099.8	2093.3	1827.4	2.8
1993	36	56.1	292.1	380.2	1323.8	1296.6	716.2	2.7
1994	36	79.2	264.3	463.5	1658.0	1286.9	207.3	2.0
1995	24	44.1	200.1	289.9	1067.9	159.8		2.7
1996	12	43.2	110.4	162.1	614.8			3.0
1997		12.6		12.7	49.5			3.0
Subtot	1015	1317.4	8061.0	11984.4	33495.7	31473.0	29313.2	

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

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

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				0.3	0.7			2.7
Subtot				21.4	39.4	38.7	33.0	
Grand Total	1026	1317.4	8061.0	13966.4	36783.4	34370.8	32152.9	

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17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) --
- | | <u>To Date</u> |
|-------------|----------------|
| RDT&E | 11/11 |
| Procurement | 919/924 |
- b. (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 gallon, FY75: \$0.35

Antecedent Program: F/A-18A
Flight hours per aircraft per month: 29.4
Number of aircraft per squadron: 12
Consumption rate, gallons per hour: 1117.1
POL cost, JP-5, per gallon, FY75: \$0.35

Date of estimate: January 1995
Source: AIR-4.2 Operating & Support Cost Estimate

- b. (U) Costs -- (FY 1975 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	2.9	2.9
Consumables	4.6	4.7
Depot Maintenance	1.0	0.9
Sustaining Investment	0.5	0.6
Indirect cost	0.2	0.2
Total	9.2	9.3

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	87.2	---	---	---	87.2
Industrial Fund	8.6	---	---	---	8.6
Total	95.8	---	---	---	95.8

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A-21 MLRS

*** CONFIDENTIAL ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(05A)823)
PROGRAM: MLRS Rocket System

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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**AS AMENDED
CLEARED**
FOR OPEN PUBLICATION

1. (U) Designation and Nomenclature (Preferred Name):
Launcher: M270 Multiple Launch Rocket System (MLRS)

MAR 24 1995 5

2. (U) DoD Component: Army

DIRECTORATE OF
AND
DEPARTMENT OF ARMY

3. (U) Responsible Office and Telephone Number:

PROGRAM EXECUTIVE OFFICE
TACTICAL MISSILES
ATIN: SPAE-MSL-ML
RSA, AL 35898-5700

COL. WILLIAM S. TAYLOR
Assigned: May 13, 1991
AV 746-1195 COMM (205) 876-1195

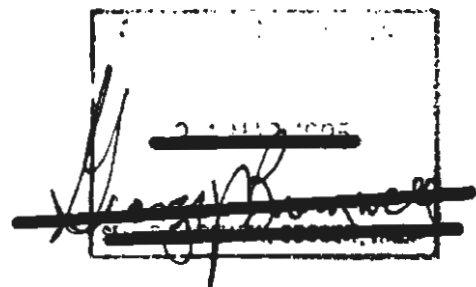
4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 63778A Project D050, D054, D027
PE 64314A Project D564

PROCUREMENT:

APPN 2032 ICN C65400 (Army)
APPN 2032 ICN C66400 (Army)
APPN 2032 ICN CAO257 (Army)



~~Classified by Multiple Launch Rocket System (MLRS) 823, December 31, 1994~~
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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 (BFV), TACFIRE, 10-Ton Truck/Trailer, Scatterable Mine Warhead (German Development), Field Artillery Meteorological Data System, Test Set AN/USM-410, Army Tactical Missile System (Army TACMS) and Advanced Field Artillery Tactical Data System (AFATDS).

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. It provides 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 Material 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 smart submunitions to be fired on rockets, Ballistic Missiles and Cruise Missiles.

(U) The system consists of a MLRS Launcher, two disposable pods containing six rockets each, a Fire Control System, and an Azimuth Position Reference Unit. The M270 launcher is also the launch platform for the Army TACMS missile. The carrier is a derivative of the BFV which uses the same engine, transmission, and other mechanical systems. The MLRS carrier 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.

(U) The system is designed for quick reaction with the capability of firing the first round within minutes of receipt of a fire mission and firing the complete load of 12 rounds in 60 seconds. MLRS will fill a firepower gap and be used to replace eight-inch howitzer units as a result of downsizing of the Army.

(U) The Improved Fire Control System (IFCS) will correct present and future supportability problems in the current MLRS Fire Control System resulting from electronic component obsolescence in the existing design. This effort will result in reduced operation and support costs and will provide growth capabilities for existing

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

and future MLRS Family of Munitions (MFOM) weapon systems. The Extended Range-MLRS (ER-MLRS) rocket will enhance the capability of the existing MLRS by providing improvements in range, accuracy, effectiveness, and maneuver force safety (improved submunitions with self destruct fuze). The MLRS launcher will have the capability to support all future ATACMS versions, to include Block 1A and Block II systems. The Improved Launcher Mechanical System (ILMS) will decrease the stow to aim point timeline, enhance effectiveness in engaging and supporting the force, and increase MLRS platform survivability.

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 program was initiated with approval of a LOA in October 1980.

(U) A General Officer Program Review (GOPR) conducted in March 1983 led to a Full-Scale Production decision in March 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

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

(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 TACMS. The 500th MLRS production launcher rolled out in February 1991.

(U) Second source qualification status was awarded to the European production line in February 1992. IFCS and ER-MLRS entered Engineering/Manufacturing Development (EMD) in 1992 and EMD contracts were awarded to Loral Vought Systems (LVS). IFCS will mitigate electronic obsolescence, reduce operation and sustainment (O&S) burden, accommodate needs of present weapon systems under development and provide growth for future weapon systems which will use the MLRS M-270 launcher platforms. The need for ER-MLRS was identified in Lessons Learned from ODS. The ER-MLRS is a successor to the basic M26 rocket and is being developed to provide increased range, improved accuracy, lower dud rates, and the potential to provide a low cost delivery vehicle for future smart munitions at extended ranges.

(U) A bilateral MOU between Japan and the United States for Japanese production of MLRS was signed January 8, 1993, providing for Japan to procure at least 36 launchers and a quantity of tactical and practice rockets over the next four years. Japanese production is scheduled to begin in 1996. IFCS and ER-MLRS programs continue on schedule in the EMD phase. A Value Engineering Change Proposal (VECP) was used to prove the concept of the Reduced Range Practice Rocket (RRPR). The RRPR, known as M28A1, went into production in July 1993. The first tactical fielding of the Fire Direction Data Manager (FDDM) took place in September 1993.

b. (U) Significant Developments Since Last Report — The Improved Fire Control System (IFCS) Hardware Preliminary Design Review (PDR) was successfully conducted in February 1994. All contractors' Critical Design Reviews (CDRs) were successfully conducted on schedule. The final system Hardware CDR was completed in June 1994 with no major action items resulting. The final Software PDR was successfully completed in July 1994.

(U) The Extended Range Rocket (ER-MLRS) program began flight testing in May 1994. A total of 12 rockets was successfully tested in the May-June 1994 timeframe. The ER-MLRS Ballistic Algorithm Flight Tests began in August 1994 with 24 rockets flight-tested

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

during August-September 1994. The Hardware CDR for ER-MLRS was successfully completed in December 1994.

(U) The M270 Family of Munitions Command and Control/Fire Direction Data Manager (MFCM/FDDM) Product Office completed its support and chartered mission in June 1994. Responsibility for continued support of the fielded FDDM remains with the FM MLRS. FDDM fielding is scheduled to be completed world-wide by March 1995.

(U) The first completely tactical MLRS AT-2 multinational flight test was successfully conducted in October 1994 at White Sands Missile Range (WSMR), NM, with very impressive results.

(U) Congress authorized the Army to initiate the Improved Launcher Mechanical System (ILMS) program in FY 95 in order to recognize savings by synchronizing ILMS retrofit schedule with the IFCS schedule. Funding authority was authorized to accelerate the ILMS. PEO Tactical Missiles has been designated the Milestone Decision Authority for this ACAT III program. The ILMS Acquisition Plan was approved by PEO Tactical Missiles in November 1994 and the J&A was approved by DA in December 1994. EMD contract award is scheduled for July 1995.

(U) The MLRS System is expected to satisfy 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 of June 17, 1993, and there are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones —

	<u>Planning Estimate</u>	<u>Approved Program: P&E</u>	<u>Current Estimate</u>
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

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

(U) Milestones (Cont'd) --

	<u>Planning Estimate</u>	<u>Approved Program; P&E</u>	<u>Current Estimate</u>
Milestone IIIA	MAY 80	N/A	MAY 80
Initial Production Delivery-Rckt	JAN 82	N/A	MAY 82
Initial Production Delivery-Inchr	FEB 82	N/A	SEP 82
Operational Test III			
Start	JUN 82	N/A	OCT 82
Complete	SEP 82	N/A	MAR 83
Milestone IIIB	N/A	N/A	MAR 83
IOC	NOV 82	N/A	MAR 83
First Unit Equipped (FUE)			
USAREUR	N/A	N/A	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
AVMRL First Delivery			
FY93	N/A	AUG 94	DEC 92
Full-Scale Prod Contr Award (MYP	N/A	SEP 83	SEP 83
I/FY83-89)			
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	N/A	JUN 89	JUN 89
II/FY89-94)			
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
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

Improved Fire Control System (IFCS)			
PEO In-Process Review	N/A	AUG 92	AUG 92

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

(U) Milestones (Cont'd) --

	<u>Planning Estimate</u>	<u>Approved Program: B/E</u>	<u>Current Estimate</u>
Milestone II	N/A	SEP 92	SEP 92
Development Contract Award	N/A	SEP 92	SEP 92
PIR Complete	N/A	NOV 93	FEB 94
CIR Complete	N/A	JUL 94	JUL 94
DT&E			
Start	N/A	JAN 95	JAN 95
Complete	N/A	JAN 97	JAN 97
IOT&E			
Start	N/A	JAN 97	JAN 97
Complete	N/A	JUL 97	JUL 97

EXTENDED RANGE ROCKET (ER-MLRS)			
PEO-IPR (MSII)	N/A	NOV 92	NOV 92
EMD Contract Award	N/A	DEC 92	DEC 92
PIR Complete	N/A	JUL 93	JUL 93
CIR Complete	N/A	FEB 95	DEC 94 (Ch-1)
PFQT			
Start	N/A	OCT 96	OCT 96
Complete	N/A	FEB 97	FEB 97
PQT			
Start	N/A	JUL 98	JUL 98
Complete	N/A	SEP 98	SEP 98

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 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

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

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.

MYP-II Program Year 5 Award date was changed from November 1992 to December 1992 to reflect actual date of award. First Delivery MYP-II PY5 date was changed from February 1994 to May 1994 due to conversion of planned tactical rockets to practice rockets. Both the IFCS and ER-MLRS successfully completed In Process Reviews in 1992 and received MDA Milestone II approval to enter Engineering/Manufacturing Development (EMD). These are the initial entries for ER-MLRS.

The IFCS PDR Complete date was rescheduled from Nov 93 to Feb 94 as a result of impacts caused by late contract award, due to acquisition process leadtime and delayed definitization (October 29, 1993).

c. (U) Current Change Explanations --

(Ch-1) The ER-MLRS CDR Complete date Current Estimate changed from Feb 95 to Dec 94 to reflect actual completion of the review.

d. (U) References --

(U) Planning Estimate:

DCP Number 165, dated May 15, 1979.

(U) Approved Program; ~~PdE~~:

AAE Approved Acquisition Program Baseline dated June 17, 1993.

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10. (U) Performance Characteristics:

a. (U) Performance --		<u>Approved</u> <u>Program; B&E</u> <u>Objective/Threshold</u>		<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Technical Development Characteristics		<u>PE</u>			
<u>Technical</u>					
(b)(1)					
Maximum Range (km)	35	N/A	/ N/A	31.8	31.8
Reliability					
Rocket Preflight, Launch, & In-flight	0.97	N/A	/ N/A	.94	.96
Launcher	0.92	N/A	/ N/A	.87	.87
Reliability					
Launcher Mean Time to Repair (hrs)					
Organizational	1.0	1.0	/ 2.3	2.3	2.3
Direct Spt/General Spt	4.0	4.0	/ 2.4	2.4	2.4
Availability					
Operational	N/A	.78	/ .78	.78	.78
Essential Unsched- uled Maintenance	N/A	23	/ 23	23	23
Actions per 1000 Hours of Launcher Module Operation					
Percent of Items Removed with No Evidence of Failure	N/A	7	/ 7	7.2%	7%

Production Hardware Charateristics: Acceptable Criteria					
Rockets Fly-to-Buy					
Reliability	N/A	.89	/ .89	.97	.97
(b)(1)					
AVMRL Production	N/A	40	/ 40	40	40
Reliability					
Acceptance Test (PRAT) (fire missions w/o failure)					

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

	Approved Program; PE	Demon- strated	Current
<u>PE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>

Technical Development			
Characteristics:			
Operational			
(b)(1)			

IMPROVED FIRE CONTROL

SYSTEM (IFCS):

MTBOMF (hrs)	N/A	293	/ 202	TBD	293
POS/NAV Alignment Time (cold start)	N/A	5	/ 7.5	TBD	5

EXTENDED RANGE ROCKET:

MAX RANGE (km)	N/A	>45	/ 45	TBD	>45
MIN RANGE (km)	N/A	<15	/ 15	TBD	<15


Under Production Hardware Characteristics:

Rocket Fly-to-Buy (FTB) reliability was based on production contract rocket FTB Acceptance Requirements. FTB was performed on each lot of rockets (1 month production, but not more than 500 Rocket Pods).

Accuracy numbers were based on precision error standard deviation of a ripple firing of six rockets.

Armored Vehicle Multiple Rocket Launcher (AVMRL) PRAT numbers were based on production contract launcher PRAT Acceptance Requirements.

b. (U) Previous Change Explanations —

-  (1) (U) Maximum range decrease of 3km (35km to 31.8km) meets the system threshold. It is not cost effective to go from 32km to 35km because 16.5% of the munitions must be given up to reach only 1.9% more targets.

(b)(1)						
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10c. (U) Performance Characteristics (Cont'd):

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

d. (U) References --

(U) Planning Estimate:

DCP Number 165, dated May 15, 1979.

(U) Approved Program:PAE:

AAE Approved Acquisition Program Baseline dated June 17, 1993.

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

a. (U) Cost --	Planning <u>Estimate</u>	Approved <u>Program:PAE</u>	Current <u>Estimate</u>
Development (RDT&E)	261.0	367.2	392.9
Procurement	1971.3	3048.1	2787.4
M77	(1624.6)		(1556.8)
Practice Rounds	(97.9)		(192.2)
Launchers	(118.9)		(918.7)
Total Flyaway	(1841.4)		(2667.7)
Other Wpn Sys	(123.0)		(21.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(6.9)		(98.2)
Construction (MILCON)	0.0	52.8	53.6
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 78 Base-Year \$	2232.3	3468.1	3233.9
Escalation	1221.7	4001.9	3533.9
Development (RDT&E)	(39.2)	(187.7)	(229.8)
Procurement	(1182.5)	(3779.6)	(3270.3)
Construction (MILCON)	(0.0)	(34.6)	(33.8)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	3454.0	7470.0	6767.8
b. (U) Quantity --			
Development (RDT&E)	10	10	10
Procurement	<u>173</u>	<u>918</u>	<u>754</u>
Total	183	928	764

Current Estimate includes procurement of 488,742 Tactical Rockets and 72,132 Practice Rockets.

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

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

COUNTRY	LAUNCHER QTY	FUNDS
Bahrain	9	\$ 51.6M
Greece	18	109.2M
Israel	6	60.9M
Italy	2	10.9M
Netherlands	22	174.4M
United Kingdom	4	13.9M
Turkey	12	61.0M
France	2	6.0M
Germany	6	43.3M
Japan	36*	31.6M
Other Support Costs		18.9M
TOTAL		\$581.7M

*Japan's launchers were purchased commercially from contractor.
Costs are for rockets and engineering services.

NOTE: Other Support Costs includes NAMSAs funding for engineering services.

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Planning Estimate:
DCP Number 165, dated May 15, 1979.

(U) Approved Program/PdE:
AAE Approved Acquisition Program Baseline dated June 17, 1993.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY78\$)	3233.9	3468.1	
(2) Quantity	764	928	
(3) Unit Cost	4.233	3.737	13.263

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY78\$)	2787.4	3048.1	
(2) Quantity	754	918	
(3) Unit Cost	3.697	3.320	11.337

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13. (U) Cost Variance Analysis:

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

	ROT&E	PROC	MILCON	TOTAL
Planning Estimate	300.2	3153.8	0.0	3454.0
Previous Changes:				
Economic	+18.9	+617.3	-11.3	+624.9
Quantity	-	+1388.3	-	+1388.3
Schedule	-	+24.1	-	+24.1
Engineering	+226.1	+21.3	-	+247.4
Estimating	+0.9	+373.1	+98.7	+472.7
Other	+9.5	+9.1	-	+18.6
Support	-	+51.5	-	+51.5
Subtotal	+255.4	+2484.7	+87.4	+2827.5
Current Changes:				
Economic	-1.1	-19.5	0.6	-20.0
Quantity	-	181.7	-	+181.7
Schedule	-	-	-	-
Engineering	63.1	194.8	-	+257.9
Estimating	5.1	59.9	-0.6	+64.4
Other	-	-	-	-
Support	-	2.3	-	+2.3
Subtotal	+67.1	+419.2	-	+486.3
Total Changes	+322.5	+2903.9	+87.4	+3313.8
Current Estimate	622.7	6057.7	87.4	6767.8

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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	-	+610.2	-	+610.2
Schedule	-	-27.5	-	-27.5
Engineering	+100.2	+7.4	-	+107.6
Estimating	-0.6	+78.5	+53.7	+131.6
Other	+3.5	+6.5	-	+10.0
Support	-	-11.4	-	-11.4
Subtotal	+103.1	+663.7	+53.7	+820.5
Current Changes:				
Quantity	-	64.0	-	+64.0
Schedule	-	-	-	-
Engineering	26.6	64.0	-	+90.6
Estimating	2.2	23.2	-0.1	+25.3
Other	-	-	-	-
Support	-	1.2	-	+1.2
Subtotal	+28.8	+152.4	-0.1	+181.1
Total Changes	+131.9	+816.1	+53.6	+1001.6
Current Estimate	392.9	2787.4	53.6	3233.9

b. (U) Previous Change Explanations —

RDT&E

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Engineering: New RDT&E effort for IFCS. Initial funding of ER-MLRS. Additional funding of IFCS.

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

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

growth on finalization of R&D contract. Decrease in the estimate for IFCS. Adjustment for current and prior inflation. Adjustment resulting from OSD "set aside."

Other: 11-week strike at FMC resulting in a 4-month slip in the program schedule.

Procurement

Economic: Revised escalation indices. 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. Increase in FY92 of 99 launchers and 23,760 practice rockets. Decrease in FY92 of 2250 tactical rockets. Reduction in FY93 of 184 launchers and 462 tactical rockets.

Schedule: Restoration of production rate. Establishment of a multiyear procurement. Cost savings associated with decrease in procurement buys for launchers. Cost increase in FY92 resulting from the stretch-out of launcher procurement schedule. Additional cost increase due to the change in tactical rounds procurement schedule.

Engineering: Procurement costs associated with the ER-MLRS.

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

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MLRS Rocket System, December 31, 1994

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

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. Adjustment for current & prior inflation. Increase in carrier unit cost (FY93-FY94) due to going from MYP to single-year production for Bradley and MLRS launchers. Reduced estimate in launcher funding in FY94 to maintain a warm production base. Additional funding in FY95 and FY96 associated with fielding of previously procured launchers. Decrease due to cancellation of warm line rocket funding in FY95-99. Initial funding for start of ER-MLRS in FY99.

Other: Eleven-week strike at FMC resulting in a four-month slip in the program schedule.

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. Funding for Payroll, Travel, Contracts, Total Package Fielding, New Equipment Training, and First Destination Transportation for FY92-97 changed from OMA to MIPA funding. Correction of prior SAR variances to reconcile flyaway and support. Revised estimate of initial spares costs. Adjustment for current and prior inflation. Transfer of consumable spares from initial spares line to launcher line. Increased other weapon system cost to support launcher and ER-MLRS. Reduced Initial Spares requirements associated with quantity decrease. Decrease in data requirements associated with decrease in launcher quantities.

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.

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MLRS Rocket System, December 31, 1994

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

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.8
Funding for Improved Launcher Mechanical System (ILMS) EMD program in FY95-98. (Engineering)	+26.6	+63.1
Additional funding for Improved Fire Control System (IFCS) during FY94-97. (Estimating)	+2.2	+5.2
Decrease in ER-MLRS funding during FY93-97. (Estimating)	-0.4	-0.9
RDT&E Subtotal	+28.8	+67.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-19.5
Adjustment for Current and Prior Inflation. (Estimating)	+9.0	+18.5
Total Variance associated with quantity increase.	+143.4	+420.4
Increase of 20 National Guard launchers. Total launchers increased from 734 to 754. (Quantity)	+21.2	+57.3
Increase in funding to procure 10344 ER-MLRS rockets in FY95-01. (Quantity)	+25.5	+78.7
Increase of practice rockets from 62994 to 72132 in FY94-95. (Quantity)	+17.3	+45.7
Additional funding to procure 10344 ER-MLRS rockets in FY95-01. Product Improvement to the configuration of the tactical rocket. (Engineering)	+64.0	+194.8
Transfer in funding for tactical rocket line to practice rocket line in FY94. (Estimating)	-12.0	-32.2

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MLRS Rocket System, December 31, 1994

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

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Decreased funding to launcher line due to reprogramming in FY94 to rocket line. (Estimating)	-1.4	-3.7
Decreased funding to launcher line due to reprogramming in FY94 to mod line. (Estimating)	-2.2	-5.7
Additional funding for 20 launchers for National Guard in FY95. (Estimating)	+8.7	+23.6
Additional funding in FY95-96 for fielding of previously procured launchers. (Estimating)	+21.1	+59.4
Adjustment for Current & Prior Inflation. (Support)	+0.7	+1.1
Reduced Initial Spares requirement. (Support)	-0.3	-0.9
Data requirements associated with the increase of 20 National Guard Launchers. (Support)	+0.8	+2.1
 Procurement Subtotal	 +152.4	 +419.2
 (3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	+0.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.6
 MILCON Subtotal	 -0.1	 --

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.87	0.79	-12.30	0.03	0.66	0.70	0.02	0.07	-10.03	8.86

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MLRS Rocket System, December 31, 1994

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

a. (U) RT&E --
(U) IFCS DEVELOPMENT:

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
LVS, DALLAS, TX				
DAAH01-92-C-0432, CPIF	\$134.0	N/A	0	
Award: September 28, 1992				
Definitized: October 29, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$134.5	N/A	0	\$138.3	\$139.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.2	\$-0.9
Cumulative Variances To Date (12/31/94)	\$-1.3	\$-2.5
Net Change	\$-1.5	\$-1.6

Explanation of Change:

The net change in cost and schedule variances are due to design changes that resulted from the System Design Review (SDR).

b. (U) Procurement --
(U) LAUNCHER MYII (Launcher):

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
LTVAD, DALLAS, TX				
DAAH01-89-C-0336, FFP/EPA	\$942.0	N/A	235	
Award: June 1, 1989				
Definitized: June 30, 1989				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1129.2	N/A	284	\$1129.2	\$1129.2

Explanation of Change:

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

Information is as of December 31, 1994. The above contract values represent a five-year multiyear acquisition. Details by year are as follows:

Initial Contract Price (\$M).

FFP	Quantity
	Launcher/Tactical/Practice
MYP-1 \$176.2	62/17,490/570

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MLRS Rocket System, December 31, 1994

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

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 \$178.4	Same as initial
MYP-2 \$208.3	Same as initial
MYP-2-OPT \$127.7	27/16,788/3,756
MYP-3 \$210.3	Same as initial
MYP-3-OPT \$98.0	22/12,000/0*
MYP-4 \$170.7*	44/20,286/9306
MYP-5 \$135.8*	44/270/20,046

*—The changes to MYP-4 were due to VECP, waivers, and EPA adjustments. The decrease in MYP-5 is a result of the conversion of tactical rockets to FMS requirements, as well as the above. The change in quantity of tactical rockets in MYP-3-OPT is a correction.

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: 92.4% (\$6256.0 / \$6767.8)

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MLRS Rocket System, December 31, 1994

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

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

<u>Appropriation</u>	<u>Prior Years (FY76-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RD&E	477.6	68.8	53.7	22.6	622.7
Procurement	5691.0	56.5	64.8	245.4	6057.7
MILCON	87.4	-	-	-	87.4
O&M	-	-	-	-	-
Total	6256.0	125.3	118.5	268.0	6767.8

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	7.5
1977				0.4	0.4	0.4	0.4	1.6
1977				7.2	6.9	6.9	6.9	6.4
1978				44.3	46.4	46.4	46.4	7.1
1979				61.3	70.9	70.9	70.9	9.1
1980				53.3	67.8	67.8	67.8	10.6
1981				50.5	70.0	70.0	70.0	10.6
1982				27.2	40.0	40.0	39.9	7.6
1983				17.0	25.9	25.9	25.9	4.0

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MLRS Rocket System, December 31, 1994

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								
1992				9.8	20.2	20.2	20.0	3.0
1993				11.1	23.6	23.6	22.6	2.7
1994				19.2	41.7	41.7	39.4	2.0
1995				25.8	57.8	26.6	7.5	2.7
1996				29.8	68.8			3.0
1997				22.6	53.7			3.0
1998				9.2	22.6			3.0
Subtot	10			392.9	622.7	446.4	423.7	

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MIRS Rocket System, December 31, 1994

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	Ex- pended	

Appropriation: 2032 Missile Procurement, Army

1980	12	14.7	30.6	46.5	67.0	65.3	65.2	11.5
1981	32	15.9	55.6	73.3	117.8	113.7	113.6	11.6
1982	68	10.0	90.1	112.4	197.1	171.7	170.6	14.3
1983	72	11.6	205.3	239.1	443.5	419.5	417.9	8.9
1984	76		270.1	281.7	533.8	508.8	508.8	7.1
1985	44		248.8	261.7	514.0	484.7	484.7	3.4
1986	44		229.7	230.8	468.9	468.8	468.8	2.8
1987	44		205.6	212.6	449.5	441.6	441.6	2.7
1988	24		180.8	191.6	419.2	404.4	403.6	3.0
1989	62		186.9	198.7	455.7	429.8	425.6	4.2
1990	68		212.8	218.2	516.7	497.4	491.8	4.1
1991	66		252.0	252.8	613.9	613.9	589.6	4.3
1992	44		72.5	73.3	182.4	181.7	172.8	3.0
1993	44		98.5	106.1	270.9	240.8	180.6	2.7
1994	34		93.7	98.9	259.5	134.2	23.8	2.0
1995	20		61.7	67.0	181.1	10.4		2.7
1996			18.6	20.5	56.5			3.0
1997			22.8	22.8	64.8			3.0

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MLRS Rocket System, December 31, 1994

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: 2032 Missile Procurement, Army (Cont'd)

1998			15.8	15.8	46.3			3.0
1999			16.5	16.5	49.8			3.0
2000			16.0	16.0	49.8			3.0
2001			31.1	31.1	99.5			3.0
Subtot	754	52.2	2615.5	2787.4	6057.7	5186.7	4959.0	

NOTE: Recurring flyaway dollars with no quantities in FY96-01 are for procurement of ER-MLRS rockets and, in FY96-97, for fielding of previously procured launchers.

Appropriation: 2050 Military Construction, Army

1982				10.7	16.4	16.4	16.4	7.6
1983				16.8	26.4	26.4	26.4	4.0
1984				11.3	18.5	18.5	18.5	3.8
1985				5.6	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								

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MLRS Rocket System, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2050 Military Construction, Army (Cont'd)

1991				0.9	1.9	1.9	1.9	4.3
Subtot				53.6	87.4	87.4	87.4	
Grand Total	764	52.2	2615.5	3233.9	6767.8	5720.5	5470.1	

17. (U) Production Rate Data:

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

			<u>To Date</u>
			10/10
			656/656

		Plan	Actual
RT&E	Rockets	504	470
PROCUREMENT	Tactical Rockets	477396	477396
	Practice Rockets	62328	62784
	Launcher	656	656

Note: These total deliveries are as of December 31, 1994.

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

	(Average Unit Flyaway Cost)		Latest Approved Threshold
	Development Estimate	Current Estimate	
@ 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

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MLRS Rocket System, December 31, 1994

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

	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			
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 Program Office Estimate (POE) (Latest validation Sep 94) update. The POE updates operating tempo, reliability/maintainability, maintenance concept, manning and logistics policies. This POE information is integrated into the annual update of the MLRS 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 POE update and divided by the number of MLRS 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 MLRS.

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MLRS Rocket System, December 31, 1994

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

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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	0.7	—	—	—	0.7
Industrial Fund	9.9	—	—	—	9.9
Total	10.6	—	—	—	10.6

There was no Exhibit OP-18 for MLRS for the current SAR cycle.

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PROGRAM: MK 48 ADCAP (MYP)

AS OF DATE: December 31, 1994

<u>SUBJECT</u>	<u>INDEX</u>	<u>PAGE</u>
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Production Rate Data		16
Operating and Support Costs		16

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 CAPT. J. P. DAVIS
 PROGRAM PEO Assigned: September 1, 1992
 UNDERSEA WARFARE AV 332-0616 COMM (703) 602-0616
 WASHINGTON, DC 20361-5103

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

RDT&E:
 PE 0205632N Project V0366
 PROCUREMENT:
 APPN 1507 ICN 311100 (Navy)
 MILCON:
 PE 242896N

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~~DATE 2-8-1993~~
~~BY: [Signature]~~
~~Office of the General~~
~~Naval Operations Dept. of the Navy~~

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MK 48 ADCAP (MYP), December 31, 1994

5. (U) Related Programs:

Submarine Fire Control and Launch Systems, Mobile ASW Target

(b)(1)

7. (U) Program Highlights:

(b)(1)

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MK 48 ADCAP (MYP), December 31, 1994

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c. ~~(b)~~ Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 15 January 1993. There are no Nunn-McCurdy unit cost breaches.

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MK 48 ADCAP (MYP), December 31, 1994

9. (U) Schedule:

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
DNSARC I	SEP 79	SEP 79	SEP 79
PSD Contract Award	AUG 82	AUG 82	AUG 82
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 January 15, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)			

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MK 48 ADCAP (MYP), December 31, 1994

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				

SOFTWARE:

(U) LATEST ESTIMATE IS BASED ON CURRENT OPERATIONAL SOFTWARE.

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MK 48 ADCAP (MYP), December 31, 1994

10b. (b)(1)

b. (U) Previous Change Explanations --

(b)(1)

c. (U) Current Change Explanations --

(b)(1)

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MK 48 ADCAP (MYP), December 31, 1994

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(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 January 15, 1993.

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

(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.

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MK 48 ADCAP (MYP), December 31, 1994

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 January 15, 1993.

12. (U) Unit Cost Summary:

(b)(1)

Current

UCB

Percent

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MK 48 ADCAP (MYP), December 31, 1994

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	-8.7	-44.6	-	-53.3
Quantity	-	-3507.0	-	-3507.0
Schedule	+53.4	+2186.8	+0.1	+2240.3
Engineering	-164.2	-623.5	-	-787.7
Estimating	+88.9	-642.5	+5.8	-547.8
Other	-	-	-	-
Support	-	-224.9	-	-224.9
Subtotal	-30.6	-2855.7	+5.9	-2880.4
Current Changes:				
Economic	-0.2	-3.2	-0.1	-3.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.2	2.6	0.1	+2.9
Other	-	-	-	-
Support	-	-1.7	-	-1.7
Subtotal	-	-2.3	-	-2.3
Total Changes	-30.6	-2858.0	+5.9	-2882.7
Current Estimate	1117.6	2777.5	22.5	3917.6

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MK 48 ADCAP (MYP), December 31, 1994

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

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	1312.1	5019.6	16.0	6347.7
Previous Changes:				
Quantity	-	-2128.0	-	-2128.0
Schedule	+43.5	+736.2	-	+779.7
Engineering	-137.8	-377.0	-	-514.8
Estimating	+63.9	-458.0	+5.2	-388.9
Other	-	-	-	-
Support	-	-184.7	-	-184.7
Subtotal	-30.4	-2411.5	+5.2	-2436.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.2	2.2	-	+2.4
Other	-	-	-	-
Support	-	-1.4	-	-1.4
Subtotal	+0.2	+0.8	-	+1.0
Total Changes	-30.2	-2410.7	+5.2	-2435.7
Current Estimate	1281.9	2608.9	21.2	3912.0

b. (U) Previous Change Explanations --

RDTE

Economic: Revised Escalation Rates, Economic Adjustment for Negative Program Change

Schedule: CCAPS schedule slip, technical problems during CCAPS D&V phase

Engineering: Propulsion improvement system restructuring, Transition to Modification Program

Estimating: Budget Adjustments, new program starts for Warhead Lethality Improvements and OADEx, addition of FYDP funding for continuation of program through FY97, Incorporation of POM94 Decision, repricing, and inflation offset.

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MK 48 ADCAP (MYP), December 31, 1994

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

Procurement

Economic: Revised Escalation Rates, Economic Adjustment for Negative Program Change
Quantity: Decrease of 1,926 end items
Schedule: Program extension from reduced annual quantities, schedule variance resulting from decrease of 1,926 total end items
Engineering: Propulsion improvement program restructuring, SECNAV increase for Mods Value Engineering
Estimating: Sole source reduction, Savings from Multiyear Procurement (FY92-94), sample proofing reduction, budget adjustments, inflation offset
Support: Revised spares requirements, Initial Spares reductions due to transition to Modification Program, Other Weapon System Cost reductions due to transition to Modification Program

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, Post FY94 transition to Modification Program, and offsets for escalation

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
RDT&E Subtotal	+0.2	--
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	+2.2	+2.6
Adjustment for Current & Prior Inflation. (Support)	+0.6	+0.7

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MK 48 ADCAP (MYP), December 31, 1994

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised initial spares requirements (Support)	-2.0	-2.4
Procurement Subtotal	+0.8	-2.3
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	--	+0.1
MILCON Subtotal	--	--

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

~~(U)~~ Current SAR Baseline to Current Estimate --

PAUC (Initial Est.)	Changes							PAUC (Current Est.)
	Eng	Qty	Sch	Eng	Est	Other	Sch	Total
(b)(1)								

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

a. (U) Procurement --	Initial Contract Price			
(U) <u>WPN PRIME (P6-P8):</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
HUGHES AIRCRAFT CORP, FOREST, MS				
N00024-92-C-6100, FFP	\$183.8	N/A	324	
Award: May 7, 1992				
Definitized: May 7, 1992				
Current Contract Price	Estimated Price At Completion			
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$191.4	N/A	324	\$191.4	\$191.4

Explanation of Change:

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

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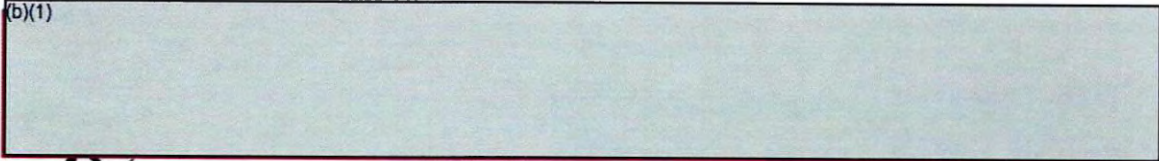
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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

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

<u>Appropriation</u>	<u>Prior Years</u> (FY79-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	1117.6	-	-	-	1117.6
Procurement	2777.5	-	-	-	2777.5
MILCON	22.5	-	-	-	22.5
O&M	-	-	-	-	-
Total	3917.6	-	-	-	3917.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Excl 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

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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	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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	54.2	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	34.0	34.0	4.0
1991				51.4	56.7	56.5	56.2	4.3
1992				12.9	14.7	14.7	14.4	2.8
1993				24.1	28.0	28.0	26.6	2.7
1994				22.4	26.7	25.9	21.5	2.0
Subtot				1281.9	1117.6	1116.4	1100.7	

Appropriation: 1507 Weapons Procurement, Navy

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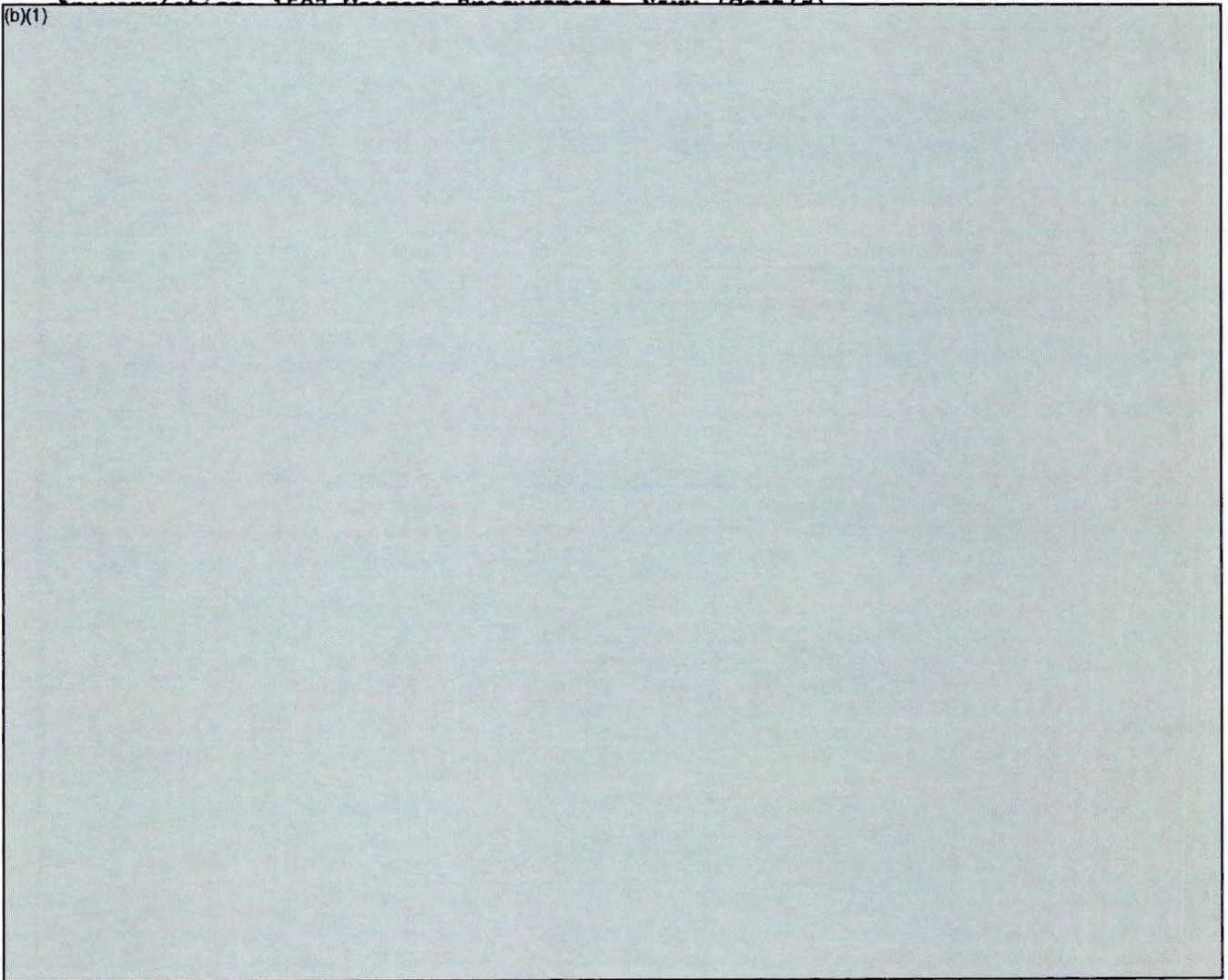
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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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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)

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17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	48/48
Procurement	1192/1231

b. (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 IV 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 MILPERS estimates of ADCAP related costs.

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MK 48 ADCAP (MYP), December 31, 1994

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

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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M Industrial Fund	24.7	5.3	5.5	283.0	318.5
Total	24.7	5.3	5.5	283.0	318.5

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(OLA)823)
PROGRAM: PATRIOT PAC-3

AS OF DATE: December 31, 1994

<u>SUBJECT</u>	<u>PAGE</u>
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Program Highlights	3
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Production Rate Data	21
Operating and Support Costs	21

1. (U) Designation and Nomenclature (Preferred Name):
Guided Missile System, Air Defense (PATRIOT) PAC-3 Program
2. (U) DoD Component: OSD
- Joint Participants:
Army and BMDO
3. (U) Responsible Office and Telephone Number:
Ballistic Missile Defense Organization, The Pentagon
Washington, DC 20301-7100
- LTC Malcolm O'Neill
Assigned: February 1, 1993
AV 225-7060 COMM (703) 695-7060

Project Manager
Patriot Project Office
Attn: SFAE-MD-PA

COL Frank L. Powell, II
Assigned: July 27, 1894.
AV 645-3240 COMM (205) 55-3240

II 1
27, 1894.
5) 55-3240
2 MAR 1895
George B. Brown
1895

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

RDT&E:

PE 23801D036, 0603216C, 0604225C, 0604216C, 0604865C, 0604866C

PROCUREMENT:

APPN 2032 ICN C50700 (Army)

APPN 2032 ICN CA0267 (Army)

APPN 0300 ICN 0208060C (DCA/DNA)

5. (U) Related Programs:

THAAD System, CORPS SAM, Joint Tactical Ground Station (JTAGS)

6. (U) Mission and Description:

PATRIOT, the centerpiece of the Army's corps and theater air defense forces, is an extremely capable high-to-medium altitude, long-range air defense missile system which provides air defense of ground combat forces and high-value assets against the air threat of the 1990s and beyond. PATRIOT is designed to cope with enemy defense suppression tactics that may include tactical ballistic missiles (TBM), cruise missiles, anti-radiation missiles, advanced aircraft employing saturation, maneuver, sophisticated electronic countermeasures (ECM), and low radar cross-section. In the Field Army, PATRIOT air defenses will be complemented by short-range, low altitude forward area defense weapons and will be integrated with other ground and air assets in the overall air defense of the theater of operations. The system can conduct multiple simultaneous engagements of high performance air breathing targets and TBMs with a high probability of target kill. The system will provide air defense protection in all weather conditions and in hostile ECM environments. At the battery level or Fire Unit (FU) level, the PATRIOT missile system consists of an Engagement Control Station (ECS), one Radar Set (RS), an Electric Power Plant (EPP), eight Launching Stations (LS), and associated communications equipment. At the battalion level, command and control is exercised through the Information and Coordination Central (ICC) and associated communications equipment including Communications Relay Groups (CRG). The PATRIOT RS is a multifunction phased array radar which performs a variety of surveillance, acquisition, and guidance tasks. The only manned element of the FU during air battle, the ECS, provides the human interface for control of automated operations.

The PATRIOT Advanced Capability (PAC-3) program is the result of a series of integrated, phased system improvements in combination with the PAC-3 missile (formerly ERINT). The PAC-3 missile is a high velocity hit-to-kill, surface-to-air missile capable of intercepting and destroying tactical missiles and air breathing threats. The PAC-3 missile provides the range, accuracy, and lethality to effectively defend against tactical missiles with nuclear, conventional high explosive, biological and chemical warheads. The

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PATRIOT PAC-3, December 31, 1994

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

missile uses a solid propellant rocket motor, aerodynamic vane controls, and inertial guidance to navigate to an intercept point. Shortly before arrival at the intercept point, the missile's rate of spin is increased, the on-board radar homing seeker acquires the target, and terminal homing guidance is initiated to achieve hit-to-kill by high resolution maneuvers.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
The PATRIOT PAC-3 program is the evolution of the phased materiel change improvement program and new missile procurement to upgrade PATRIOT System performance. As a result of evolving threat and analysis of PATRIOT performance in Operation Desert Storm, several system upgrades are being implemented. These system upgrades include the PAC-3 missile, radar enhancements, communications upgrades, and increased computer capability. In 1980, the Defense Science Board (DSB) evaluated approaches for tactical missile defense and confirmed the approach of the Ballistic Missile Defense Command which was based upon a small, millimeter wave radar homing interceptor. In 1981, three companies were chosen from industry proposals to perform a concept definition study with an option for a follow-on proof-of-principle technology demonstration and simulation validation program. The DSB's recommendation resulted in the award of a contract to LTV in January 1983 for the Small Radar Homing Interceptor Technology (SRHIT) program. System studies during 1980-82, showed significant advantages from an interceptor with more robust performance than SRHIT. Required improvements were identified and became tasks under the Extended Range Interceptor (ERINT) technology effort which was implemented in parallel with SRHIT. The SRHIT program was renamed Flexible Lightweight, Agile Guided Experiment (FLAGE) in March 1986, and successfully completed program objectives with a direct hit of a reentry vehicle target in June 1986. Further development conducted under the FLAGE Follow-On effort resulted in the intercept and destruction of a LANCE missile target through body-to-body contact, in May 1987. The ERINT/PAC-3 missile DEM/VAL phase began in April 1987 with the ERINT Flight Demonstration Program with a goal to flight test technology developments from the FLAGE, FLAGE Follow-On, and ERINT Technology efforts. The PATRIOT/ERINT Integration effort, begun in May 1991, included design, development, fabrication, and testing of ground support equipment to integrate the ERINT/PAC-3 missile into the PATRIOT PAC-3 system. In February 1994, the Army Systems Acquisition Review Committee (ASARC) made a down-select recommendation to proceed with development of ERINT as the PAC-3 missile, in lieu of the Multimode missile. The Defense Acquisition Board (DAB) conducted a Milestone IV/II review on 19 May 94. The PAC-3 missile was approved for entry into the Engineering and Manufacturing Development (EMD) phase. The DAB also

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PATRIOT PAC-3, December 31, 1994

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

approved the Acquisition Strategy, Low Rate Initial Production (LRIP) quantity of 90 missiles, and exit criteria for Long Lead LRIP, LRIP, Long Lead Full Rate Production (FRP), and FRP. The PAC-3 Missile Development contract was awarded to Loral Vought Systems on 26 October 1994, and the Missile Integration contract was awarded to Raytheon Company on 31 October 1994. The PAC-3 program is funded by both the Army and the Ballistic Missile Defense Organization (BMDO). Information previously reported in the PATRIOT P31 SAR has been incorporated into this SAR.

This is the initial SAR for PATRIOT PAC-3.

The PATRIOT PAC-3 System is expected to satisfy mission requirements.

b. (U) Significant Developments Since Last Report --
None - Initial SAR.

c. (U) Changes Since As Of Date --
The PATRIOT PAC-3 Acquisition Program Baseline (APB) was approved by the Defense Acquisition Executive (DAE) on 22 Feb 95.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB), dated 22 Feb 95. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
MISSILE			
Milestone II (Missile) (DAB)	MAY 94	MAY 94	MAY 94
Development Contract Award	SEP 94	SEP 94	OCT 94
Preliminary Design Review Complete	SEP 95	SEP 95	SEP 95
Critical Design Review Complete	MAR 96	MAR 96	MAR 96
Service Final DT&E			
Start	JAN 97	JAN 97	JAN 97
Complete	DEC 97	DEC 97	DEC 97
Low Rate Initial Production Decision (DAB)	JUN 97	JUN 97	JUN 97
Low Rate Initial Production Contract Award	JUL 97	JUL 97	JUL 97
Low Rate Production First Delivery	MAY 98	MAY 98	MAY 98

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PATRIOT PAC-3, December 31, 1994

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

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
IOT&E			
Start	JAN 98	JAN 98	JAN 98
Complete	JUN 98	JUN 98	JUN 98
Milestone III Production Decision	AUG 98	AUG 98	AUG 98
Full Rate Production Contract Award	AUG 98	AUG 98	AUG 98
First Unit Equipped	SEP 98	SEP 98	SEP 98
Service Depot Support	SEP 01	SEP 01 C	SEP 01

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

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

d. (U) References --

(U) Development Estimate:

Milestone IV/II ADM, dated July 7, 1994, subject: "PAC-3 Acquisition Decision Memorandum," and Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB), dated February 22, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demon- strated	Current	
	<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>

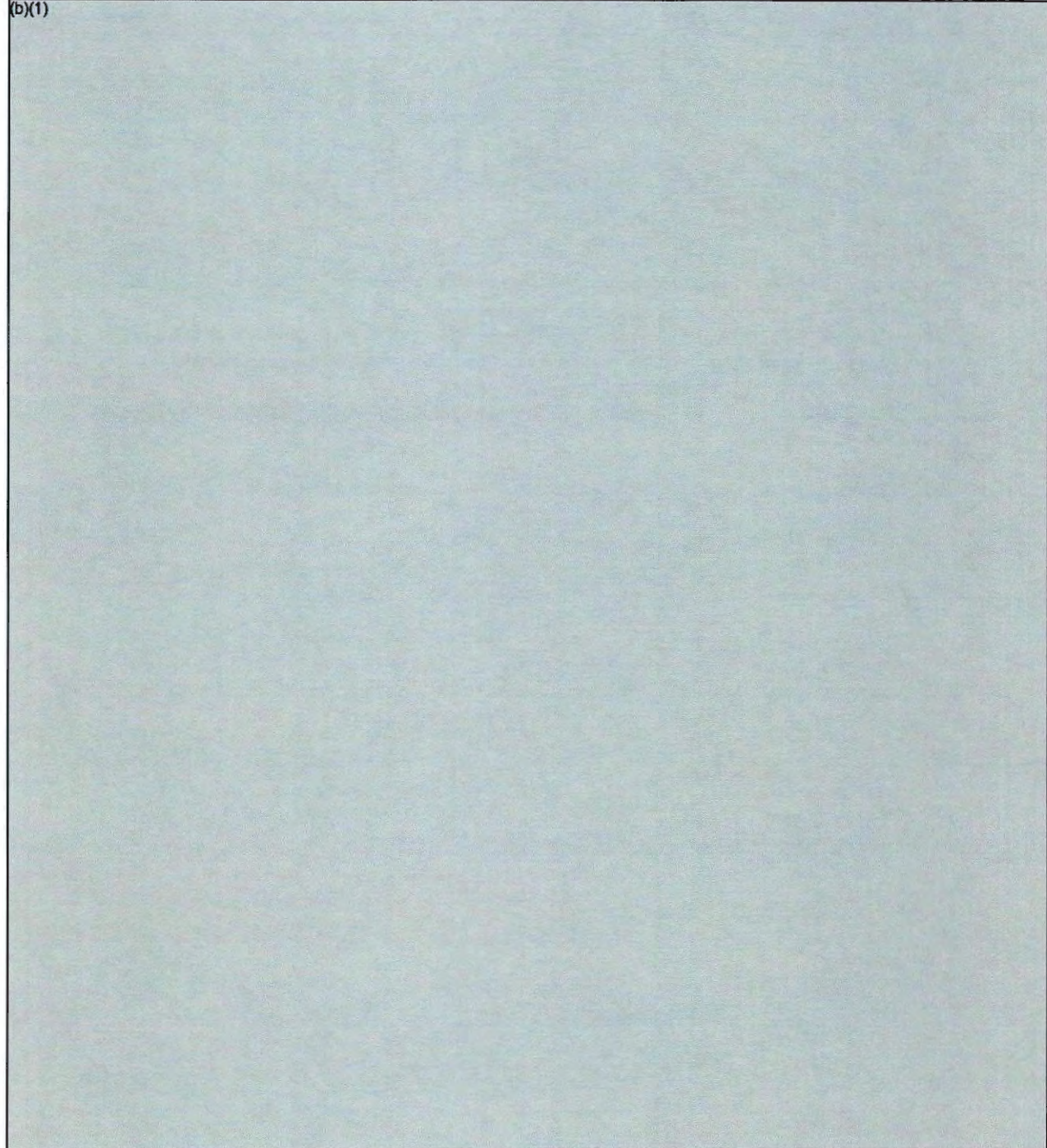
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PATRIOT PAC-3, December 31, 1994

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

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

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PATRIOT PAC-3, December 31, 1994

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/4 (U) System Effectiveness = $P(DEF) \times [1 - (1 - P(SSK))^n]$, where
n=number of shots, and SSK=Single Shot Kill

/5 (U) Missile Reliability based on Reliability Growth Curve.
Technical parameter which supports the key Joint Requirements
Oversight Council validated characteristics.

/6 (U) Technical parameter which supports the key JROC validated
characteristics.

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

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

d. (U) References --

(U) Development Estimate:

Operational Requirements Document (ORD) for PATRIOT Advanced
Capability (PAC-3), dated 1 May 1992 (Revision 1.4). DAE Approved
Acquisition Program Baseline dated February 22, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1995.

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PATRIOT PAC-3, December 31, 1994

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	2015.6	2015.6	1825.7
Procurement	2783.2	2783.2	2602.1
Recurring Flyaway	(1498.8)		(1417.8)
Nonrecurring Flyaway	(1244.7)		(1153.1)
Total Flyaway	(2743.5)		(2570.9)
Other Wpns Spt			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(39.7)		(31.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	4798.8	4798.8	4427.8
Escalation	1582.8	1582.8	1479.7
Development (RDT&E)	(420.2)	(420.2)	(388.4)
Procurement	(1162.6)	(1162.6)	(1091.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6381.6	6381.6	5907.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>54</u>	<u>54</u>	<u>54</u>
Total	54	54	54

The Program Acquisition unit of measure is a Fire Unit (FU) which consists of a Radar Set, an Engagement Control Station, an Electric Power Plant, and up to eight Launching Stations equipped with missiles. The Average Unit Procurement Cost (AUPC) unit of measure is missiles since all FUs have been procured and fielded. The LRIP quantity for the PAC-3 missile will be 90.

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Milestone IV/II Acquisition Decision Memorandum, dated July 7, 1994, subject: "PAC-3 Acquisition Decision Memorandum," and the Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated February 22, 1995.

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PATRIOT PAC-3, December 31, 1994

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

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (FY88\$)	4427.8	4798.8	
(2) Quantity	54	54	
(3) Unit Cost	81.996	88.867	-7.731
b. (U) Procurement			
(1) Cost (FY88\$)	1417.8	1498.8	
(2) Quantity	1200	1200	
(3) Unit Cost	1.182	1.249	-5.404

The Program Acquisition Unit Cost (PAUC) unit of measure is tactical Fire Units (FUs). The Average Unit Procurement Cost (AUPC) unit of measure is missiles, since all FUs have been procured and fielded. The FUs are undergoing modification to PAC-3 configuration. Missile procurement will begin in FY97.

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PATRIOT PAC-3, December 31, 1994

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	2435.8	3945.8	0.0	6381.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	20.9	13.6	-	+34.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-242.6	-253.7	-	-496.3
Other	-	-	-	-
Support	-	-12.3	-	-12.3
Subtotal	-221.7	-252.4	-	-474.1
Total Changes	-221.7	-252.4	-	-474.1
Current Estimate	2214.1	3693.4	-	5907.5

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PATRIOT PAC-3, December 31, 1994

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	2015.6	2783.2	0.0	4798.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-189.9	-172.6	-	-362.5
Other	-	-	-	-
Support	-	-8.5	-	-8.5
Subtotal	-189.9	-181.1	-	-371.0
Total Changes	-189.9	-181.1	-	-371.0
Current Estimate	1825.7	2602.1	-	4427.8

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

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	+23.9
Economic Adjustment for Negative Program Change. (Economic)	N/A	-3.0
Adjustment for Current & Prior Inflation. (Estimating)	-21.3	-24.2

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PATRIOT PAC-3, December 31, 1994

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Realignment of radar requirements (Estimating)	-9.6	-12.8
Revised estimate for missile risk mitigation effort (Estimating)	-35.6	-46.1
Refined DEM/VAL estimate for Multimode and ERINT missile downselect (Estimating)	-40.8	-48.9
Refined estimate for PAC-3 missile development (Estimating)	-64.8	-86.6
Revised estimate for PATRIOT Product Improvement Program (Estimating)	-17.8	-24.0
RDTE Subtotal	-189.9	-221.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+15.9
Economic Adjustment for Negative Program Change. (Economic)	N/A	-2.3
Adjustment for Current & Prior Inflation. (Estimating)	-15.8	-19.3
Refined estimate of PAC-3 Missile and transfer of JTIDS funds. (Estimating)	-72.8	-109.4
Refined estimates for BMDO funded upgrades to PAC-3 configuration (Remote Launch; Radar Phase 3; Classification, Discrimination, and Identification). (Estimating)	+7.6	-2.0
Refined estimates for Army funded system upgrades. (Estimating)	-91.6	-123.0
Adjustment for Current & Prior Inflation. (Support)	-0.1	-0.1
Revised estimate for Army modification initial spares (Support)	-8.4	-12.2
Procurement Subtotal	-181.1	-252.4

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PATRIOT PAC-3, December 31, 1994

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
118.178	0.639	--	--	--	-9.191	--	-0.228	-8.780	109.398

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

a. (U) RDT&E --

(U) FY89 ENGINEERING DEVEL:
 RAYTHEON Co., BEDFORD, MA
 DAAH01-89-C-0458, CPIF
 Award: April 10, 1989
 Definitized: April 10, 1989

Initial Contract Price

Target	Ceiling	Qty
\$159.8	N/A	0

Current Contract Price

Target	Ceiling	Qty
\$159.8	N/A	0

Estimated Price At Completion

Contractor	Program Manager
\$176.5	\$176.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (11/27/94)	\$-17.8	\$-4.1
Net Change	\$-17.8	\$-4.1

Explanation of Change:

This contract contains five independent tasks with varying periods of performance. The tasks are: Pulse Doppler Processor (PDP), Expanded Weapon Control Computer (EWCC), Responsive Threat Analysis, Radar Enhancement Phase III, and Classification, Discrimination, and Identification Phase III (CDI-3). The PDP, EWCC, and Responsive Threat tasks have been completed. The PDP, EWCC, and Responsive Threat tasks are Army P3I funded, and the Radar Enhancement and CDI-3 tasks are BMDO funded.

Contract status has been previously reported in the PATRIOT P3I SAR, and reporting will continue in the PAC-3 SAR. The cumulative unfavorable cost variance is primarily due to overruns in the Radar Enhancement task. The variances are associated with higher levels of testing and evaluation of the subassembly sets; increased cost to monitor subcontractors for the Traveling Wave Tube and heat exchanger; and increased manufacturing cost for incorporation of

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PATRIOT PAC-3, December 31, 1994

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

engineering changes. The unfavorable schedule variance is primarily due to delays in the CDI-3 task associated with delays in proof-of-design and proof-of-manufacturing documentation releases; and resulting delays in tooling and test equipment designs.

There are no significant impacts to the contract because of the unfavorable variances.

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>FY91 ENGINEERING DEVEL:</u>					
RAYTHEON Co., BEDFORD, MA					
DAAH01-91-C-0602, CPIF			\$171.8	N/A	0
Award: September 25, 1991					
Definitized: September 25, 1991					
			Current Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
			\$171.6	N/A	0
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
			\$172.9	\$173.2	
			<u>Cost Variance</u> <u>Schedule Variance</u>		
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date (11/27/94)			\$5.1	\$-5.8	
Net Change			\$5.1	\$-5.8	

Explanation of Change:

This contract contains six independent tasks with varying periods of performance. The tasks are: Guidance Enhancement Missile (GEM), Improved Launcher, Improved Propulsion, Multimode Risk Reduction, Routing Logic Radio Interface Unit (RLRIU) Upgrade, and Components and Hardware. The Improved Launcher, Multimode Risk Reduction, and GEM tasks have been completed. The RLRIU Upgrade and GEM tasks are Army P3I funded, and the other tasks are TMDI funded.

Contract status has been previously reported in the PATRIOT P3I SAR, and reporting will continue in the PAC-3 SAR. The cumulative favorable cost variance reflects less than planned receipt of long lead items associated with the Hardware and Components task; and a slowdown in the Improved Propulsion task as a result of the ASARC decision in Feb 94 to proceed with ERINT as the PAC-3 missile. The unfavorable cumulative schedule variance reflects schedule delays associated with the Improved Propulsion task due to the slowdown.

There is no significant impact to the contract because of the unfavorable schedule variance.

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PATRIOT PAC-3, December 31, 1994

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

			Initial Contract Price		
			Target	Ceiling	Qty
(U) <u>PAC-3 MISSILE END:</u>					
LORAL VOUGHT SYSTEMS, DALLAS, TX					
DAAH01-95-C-0021, CPIF/AF			\$	\$515.0	0
Award: October 26, 1994					
Definitized: N/A					
			Estimated Price At Completion		
Current Contract Price			Contractor	Program Manager	
Target	Ceiling	Qty			
\$	\$515.0	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	
<u>Explanation of Change:</u>					

The PAC-3 Missile Engineering and Manufacturing Development letter contract was awarded 26 Oct 94, at a Not-to-Exceed price of \$515.0M.

Contract performance data was not available for this SAR reporting period.

			Initial Contract Price		
			Target	Ceiling	Qty
(U) <u>PAC-3 MSL INTEGRATION:</u>					
RAYTHEON CO., BEDFORD, MA					
DAAH01-95-C-0022, CPIF/AF			\$0.0	\$120.8	0
Award: October 31, 1994					
Definitized: N/A					
			Estimated Price At Completion		
Current Contract Price			Contractor	Program Manager	
Target	Ceiling	Qty			
\$0.0	\$120.8	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	
<u>Explanation of Change:</u>					

The PAC-3 Missile Segment Integration letter contract was awarded 31 Oct 94, at a Not-to-Exceed price of \$120.8M.

Contract performance data was not available for this SAR reporting period.

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PATRIOT PAC-3, December 31, 1994

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

a. (U) Program Status --

- (1) Percent Program Completed: 52.0% (13 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 42.1% (\$2485.7 / \$5907.5)

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

<u>Appropriation</u>	<u>Prior Years (FY83-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2007)</u>	<u>Total</u>
RDT&E	1719.2	267.6	156.6	70.7	2214.1
Procurement	766.5	410.0	434.2	2082.7	3693.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2485.7	677.6	590.8	2153.4	5907.5

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: 2040 Research, Development, Test + Eval, Army

1989		21.8		21.8	23.4	23.4	23.4	4.2
1990		28.8		28.8	32.1	31.8	31.5	4.1
1991		39.6		39.6	45.9	45.8	45.6	4.3
1992		31.9		31.9	37.9	37.8	37.8	3.0
1993		37.6		37.6	45.8	36.3	36.3	2.7
1994		31.2		31.2	39.0	39.0	24.0	2.0

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PATRIOT PAC-3, December 31, 1994

16c. (U) 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: 2040 Research, Development, Test + Eval, Army (Cont'd)

1995		18.9		18.9	24.3	7.0	0.2	2.7
1996		9.7		9.7	12.8			3.0
1997		9.2		9.2	12.6			3.0
1998		6.9		6.9	9.7			3.0
1999		4.6		4.6	6.7			3.0
2000		4.1		4.1	6.1			3.0
2001		3.3		3.3	5.0			3.0
Subtot		247.6		247.6	301.3	221.1	198.8	

Appropriation: 2032 Missile Procurement, Army

1990		16.5		16.5	19.1	17.9	17.4	4.1
1991		125.8		125.8	149.6	142.3	118.4	4.3
1992		39.6		39.6	48.3	46.2	15.2	3.0
1993		13.6		14.2	17.7	16.8	16.1	2.7
1994		14.5		19.8	25.4	25.1	0.1	2.0
1995		19.6		24.4	32.3	5.2		2.7
1996		5.2		7.8	10.5			3.0
1997		8.5		14.8	20.6			3.0

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PATRIOT PAC-3, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

1998		10.8		15.3	21.9			3.0
1999		11.4		15.6	23.0			3.0
2000		25.5		27.3	41.5			3.0
2001		13.5		14.6	22.9			3.0
2002		7.0		7.0	11.3			3.0
2003		4.5		4.5	7.5			3.0
2004		3.8		3.8	6.5			3.0
2005		2.9		2.9	5.1			3.0
2006		2.7		2.7	4.9			3.0
2007		2.5		2.5	4.7			3.0
Subtot		327.9		359.1	472.8	253.5	167.2	
Army		575.5		606.7	774.1	474.6	366.0	

Appropriation: 0400 RDT&E, Defense Agencies

1983		38.0		38.0	33.3	33.3	33.3	4.0
1984		26.5		26.5	24.1	24.1	24.1	3.8
1985		21.8		21.8	20.4	20.4	20.4	3.4
1986		15.7		15.7	15.1	15.1	15.1	2.8

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PATRIOT PAC-3, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1987		30.5		30.5	30.2	30.2	30.2	2.7
1988		17.6		17.6	18.0	18.0	18.0	3.0
1989		61.2		61.2	65.2	65.2	65.2	4.2
1990		34.5		34.5	38.3	38.3	38.3	2.0
1991		127.1		127.1	146.5	145.2	144.5	4.3
1992		258.2		258.2	306.0	306.0	301.2	3.0
1993		173.5		173.5	210.7	210.7	210.0	2.7
1994		173.3		173.3	216.2	193.2	82.1	2.0
1995		270.8		270.8	346.8	123.4	1.7	2.7
1996		192.8		192.8	254.8			3.0
1997		105.8		105.8	144.0			3.0
1998		30.8		30.8	43.2			3.0
Subtot		1578.1		1578.1	1912.8	1223.1	984.1	

Appropriation: 0300 Procurement, Defense Agencies

1992		20.4		20.4	24.9	24.5	10.5	3.0
1993		60.3		60.3	75.2	69.9	32.6	2.7
1994		94.6		94.6	120.7	116.0	50.1	2.0

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PATRIOT PAC-3, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1995		192.9		192.9	253.3	51.1	2.0	2.7
1996		295.6		295.6	399.5			3.0
1997	90	153.3	143.8	297.1	413.6			3.0
1998	215	8.1	331.0	339.1	486.2			3.0
1999	240		286.8	286.8	423.6			3.0
2000	250		308.4	308.4	469.1			3.0
2001	250		173.4	173.4	272.0			3.0
2002	155		161.0	161.0	259.8			3.0
2003			7.0	7.0	11.7			3.0
2004			6.4	6.4	11.0			3.0
Subtot	1200	825.2	1417.8	2243.0	3220.6	261.5	95.2	
DoD	1200	2403.3	1417.8	3821.1	5133.4	1484.6	1079.3	
Grand Total	1200	2978.8	1417.8	4427.8	5907.5	1959.2	1445.3	

The Program Acquisition Unit Cost (PAUC) unit of measure is tactical Fire Units (FUs), see Section 12. The Average Unit Procurement Cost (AUPC) unit of measure is missiles, since all FUs have been procured and fielded. The end item quantities reported above are missile procurements. Non-recurring procurement costs include all costs except missile hardware costs.

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PATRIOT PAC-3, December 31, 1994

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The O&S assumptions and costs are based on PATRIOT Operating Tempo, Fire Unit Mean Time Between Failure (MTBF), and the PATRIOT Baseline Cost Estimate dated February 1994.

The concept of operation is 54 tactical Fire Units (FUs). The costs are the direct cost to support the primary personnel and to operate the FUs. The O&S consumables are replenishment spares, repair parts, and petroleum, oil and lubricants (POL). The Direct Depot Maintenance costs are the labor, materials, and transportation for repair of major FU component parts, and software support. The sustaining investment consists of modification kits and support operations. Other Direct Support costs include maintenance civilian labor, and other direct support for mod kit installation. The Indirect Costs are for indirect support operations, Military Occupational Specialty (MOS) training costs, Quarters Maintenance and Utilities, Post Production Engineering, Central Supply, Unit Operations, Base Operations, and training activities. PAC-3 is an upgrade program to the fielded PATRIOT system, therefore, O&S costs remain unchanged. There is no antecedent system.

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PATRIOT PAC-3, December 31, 1994

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 PATRIOT PAC-3 Fire Unit	Antecedent System N/A
Military Personnel	2.0	N/A
O&S Consumables	0.9	N/A
Direct Depot Maintenance	0.6	N/A
Modifications	0.2	N/A
Other Dir Spt Opns	0.1	N/A
Indirect Spt Opns	1.2	N/A
Total	5.0	N/A

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RGS:DD-COMP(O&A)823)
PROGRAM: AN/SQQ-89 ASWCS

AS OF DATE: December 31, 1994

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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 CAPT G. K. NIFONTOFF
ATTN: PMO411 Assigned: January 31, 1992
2531 Jefferson Davis Hwy AV 286-3000 COMM (703) 746-3000
Arlington, VA 22242-5169

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

RDT&E:

PE 0205620N Project V0896, V1916
PE 0604212N Project W1707
PE 0604575N Project S1451
PE 0604713N Project S0234, V1916

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AN/SQQ-89 ASWCS, December 31, 1994

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

(b)(1)

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Each of the component subsystems in the AN/SQQ-89 were separately developed as independent programs during the late 1970's and early 1980's. Each subsystem was separately approved for full production (AFP). In April 1983 the Navy chartered PMS411 to assume responsibility for developing and producing surface ship ASW systems. The AN/SQS-53C was the last subsystem to be developed, achieving Initial Operational Capability in FY91. Initially each subsystem was produced under a separate contract and the system was integrated on board ship. In FY88 General Electric Company (GE) was selected to be the first prime contractor to manufacture integrated AN/SQQ-89 systems while technology was transferred to a follower to support dual-source competition start-up in FY90. GE was awarded the FY88-89 contract on a sole source basis as the incumbent manufacturer of most of the subsystems. Based upon responses from contractor teams led by

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AN/SQQ-89 ASWCS, December 31, 1994

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

Westinghouse Electric Corporation (WEC) and Raytheon, the Navy competitively selected the WEC team to compete against the GE team for AN/SQQ-89 production. While GE was the first to produce integrated AN/SQQ-89s, WEC won the first production competition in FY90 and subsequently the FY92-95 production lots.

The FY90, FY91 and FY92 Appropriation Acts directed that the AN/SQQ-89 be redesigned to incorporate a new display, (now known as AN/UYQ-65), based on the Advanced Video Processor (AVP). In FY90 and FY91, Congress directed the redesign of AN/SQQ-89 to incorporate the AN/UYS-2 Enhanced Modular Signal Processor (EMSP).

The AN/SQY-1 program was terminated in November 1991. Funds for the Surface ASW Systems Improvement program were transferred to the AN/SQQ-89 ASWCS SAR beginning in December 1991.

In FY94 Congress directed the Navy to use commercial emulators in place of Mil-Spec display equipment. AN/SQQ-89 FY94 through FY96 AN/UYQ-21 display requirements will be met by refurbishing existing shore-based AN/UYQ-21s and upgrading their configuration for shipboard use. The AN/UYQ-70 commercial display work station will be used starting with the last AN/SQQ-89 in FY96.

All full-up production AN/SQQ-89 and AN/SRQ-4 systems beyond FY95 will be procured exclusively with SCN funds for the DDG Flight IIA. This will be addressed as part of the DDG 51 SAR. After FY92, OPN funds cover system backfit modifications and improvements which will continue to be reported in the AN/SQQ-89 SAR.

b. (U) Significant Developments Since Last Report -- COMOPTEVFOR determined the AN/SQQ-89(V)6 is operationally effective and operationally suitable, that major deficiencies of prior tests were corrected, and recommended continued introduction of AN/SQQ-89(V)6 in DDG 51 class ships. COMOPTEVFOR report #3980 (802-2-OT-IIIF) Ser. 42/5058 was submitted on 16 September 1994.

Starting with the last system in FY94, the Navy must provide AN/SQQ-89(V)10s for DDG 79 and subsequent Flight IIA ships instead of AN/SQQ-89(V)6s. The primary difference between the 89(V)10 and the 89(V)6 is the deletion of the AN/SQR-19, and the associated handling and stowage equipment. Also, the AN/UYS-1 Navy Standard Signal Processors in 89(V)6 are replaced with AN/UYS-2A EMSPs and the HP9020 COTS workstation in 89(V)6 is replaced with AN/UYQ-65, all of which are government furnished equipment under WEC's contract. Navy plans to either (1) execute the AN/SQQ-89(V)6 option in the WEC production contract at their current favorable prices and then to task WEC under our design agent contract to modify the AN/SQQ-89(V)6s, after

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

acceptance, to AN/SQQ-89(V)10s, or (2) modify the contract to deliver AN/SQQ-89(V)10s directly.

In early 1994, NAWC/AD, Detachment St. Inigoes discovered some AN/SRQ-4s delivered by Lucas Aul with misplaced parts on boards and found data error rates beyond specification. DCMAO found serious problems in every aspect of Lucas Aul's quality program during a May 1994 Quality System Review of the plant that produces AN/SRQ-4s. Since then, Lucas has replaced the faulty boards they delivered and they are resolving their underlying process problems.

In an effort to reduce initial procurement, upgrade cost, and life cycle logistic costs, the Navy is incrementally converting the AN/SQQ-89(V)10 architecture to a modular system based on industry standard commercial "off the shelf" (COTS) hardware and software. The AN/SQQ-89(V)10 for FY94-95 DDG 51 Flight IIA ships will use COTS equipment to perform AN/SQQ-89's recorder, interface processor, and environmental assessment functions. The Navy is also developing an AN/SQQ-89 engineering change that uses COTS hardware to replace the 1960-based technology used to perform hull-mounted sonar passive receiver functions. Most of the remaining Mil-spec units that have COTS equivalents will be replaced, starting with our FY96 buy.

This system will satisfy mission requirements.

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

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline, dated 10 May 91. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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

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

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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.

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 May 10, 1991.

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10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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AN/SRQ-4
DATA TRANSFER

(b)(1)



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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
The AN/SQQ-28 is required to process the sonobuoys identified, and has demonstrated this				
(b)(1)				
(sq ft.)/(tons)				
Reliability				(b)(1)
() Passive Subsystem (MTBF)(HW)(hrs)	600	600 / 600		
() Active Subsystem (hrs)	1100	1100 / 1100		
() Total Subsystem (MTBF)(HW)(hrs)	460	460 / 460		
() Operational Availability (Ao)	(b)(1)			
() Active Detection				
() BB, CZ, PDT Search Coverage (deg)				
() Noise Limited FOM 15 kt (db)				
() Passive Detection				
() Passive Narrow Band Search Coverage (deg)				
() Passive Narrow Band Search FOM (db)				
() Passive Broad Band Search Coverage (deg)				
() Passive Broad Band Search FOM (db)				
() Mean Time Between Mission Critical Failure (MTBMCF) (hrs)				

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				

(U) The "Demonstrated Performance" data are currently being reviewed via Revision 4 to TEMP 802-2 to reflect recent average fleet performance. Subsequently, the "Current Estimate" data will be updated as appropriate.

(b)(1)

AN/SQR-19 Operational Availability values do not reflect Mean Logistic Delay Time (MLDT).

AN/SQQ-89 thresholds were developed to address the composite capability of the individual subsystems within the overall AN/SQQ-89 ASW combat system architecture.

AN/SQQ-89 Operational Availability values account for Mean Logistics Delay Time (MLDT) in the calculation for the system.

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.

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10c. (U) Performance Characteristics (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, 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 May 10, 1991.

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

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	754.2	1331.2	1071.1
Procurement	2961.0	2637.6	2316.7
Major System Equipment	(1986.5)		(1284.3)
System Support	(207.9)		(408.2)
Total Sailaway	(2194.4)		(1692.5)
Other Weapon Systems Cost	(548.3)		(446.2)
Peculiar Support	(0.0)		(27.4)
Initial Spares	(218.3)		(150.6)
Construction (MILCON)	0.0	4.6	4.6
Ops. and Maint. (O&M)	<u>183.8</u>	<u>0.0</u>	<u>79.3</u>
Total FY 85 Base-Year \$	3899.0	3973.4	3471.7
 Escalation	248.6	630.4	409.0
Development (RDT&E)	(-66.4)	(76.0)	(-29.9)
Procurement	(291.9)	(554.6)	(433.5)
Construction (MILCON)	(0.0)	(-0.2)	(-0.1)
Ops. and Maint. (O&M)	<u>(23.1)</u>	<u>(0.0)</u>	<u>(5.5)</u>
Total Then-Year \$	4147.6	4603.8	3880.7
 b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>120</u>	<u>92</u>	<u>83</u>
Total	120	92	83

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

(1) AN/SQR-19

Spain:

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

- 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

(4) AN/SRQ-4

- Spain:
 - 1 AN/SRQ-4 system in FY87 for \$0.8M
 - 2 AN/SRQ-4 systems in FY90 for \$1.6M

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 May 10, 1991.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 91 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY85\$)	3471.7	3973.4	
(2) Quantity	83	92	
(3) Unit Cost	41.828	43.189	-3.152
b. (U) Procurement			
(1) Cost (BY85\$)	2316.7	2637.6	
(2) Quantity	83	92	
(3) Unit Cost	27.912	28.670	-2.642

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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	+4.3	+65.8	+0.1	+5.7	+75.9
Quantity	-	-1072.0	-	-	-1072.0
Schedule	+4.5	+569.0	-	-	+573.5
Engineering	+6.7	+395.6	-	-	+402.3
Estimating	+314.5	-287.7	-0.1	-25.3	+1.4
Other	-	-	-	-	-
Support	-	-210.6	+4.4	-102.5	-308.7
Subtotal	+330.0	-539.9	+4.4	-122.1	-327.6
Current Changes:					
Economic	-0.4	-17.0	-	-	-17.4
Quantity	-	0.3	-	-	+0.3
Schedule	-	74.9	-	-	+74.9
Engineering	-	23.3	-	-	+23.3
Estimating	23.8	-93.5	0.1	-	-69.6
Other	-	-	-	-	-
Support	-	49.2	-	-	+49.2
Subtotal	+23.4	+37.2	+0.1	-	+60.7
Total Changes	+353.4	-502.7	+4.5	-122.1	-266.9
Current Estimate	1041.2	2750.2	4.5	84.8	3880.7

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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	-	-877.1	-	-	-877.1
Schedule	+4.7	+257.7	-	-	+262.4
Engineering	+9.0	+298.6	-	-	+307.6
Estimating	+287.8	-177.4	-0.1	-23.6	+86.7
Other	-	-	-	-	-
Support	-	-172.5	+4.6	-80.9	-248.8
Subtotal	+301.5	-670.7	+4.5	-104.5	-469.2
Current Changes:					
Quantity	-	0.2	-	-	+0.2
Schedule	-	18.5	-	-	+18.5
Engineering	-	21.4	-	-	+21.4
Estimating	15.4	-43.8	0.1	-	-28.3
Other	-	-	-	-	-
Support	-	30.1	-	-	+30.1
Subtotal	+15.4	+26.4	+0.1	-	+41.9
Total Changes	+316.9	-644.3	+4.6	-104.5	-427.3
Current Estimate	1071.1	2316.7	4.6	79.3	3471.7

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. Transfer of funds from the AN/SQY-1 program.**Procurement****Economic:** Revised escalation indices.**Quantity:** Decreased ship market.**Schedule:** Revised ship installation schedule with reduction

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

in procurement rate.
Engineering: System redesigned to use new Navy standard hardware. Addition of AN/SQS-53A/B Product Improvement.
Estimating: Contract savings, reduction of unallocated budget and rescope of lab effort. Current and prior inflation offset.
Support: Change in procurement requirements and contract savings. Decrease in spares and other support due to funding constraints.

MILCON

Support: PMA266 transfer of AN/SQQ-28 and AN/SRQ-4 MILCON funding for the construction of operations and maintenance facilities in Mayport, Florida and North Island, San Diego, California.

O & M

Economic: Revised escalation indices.
Estimating: Refinement of estimate to include two additional program years for 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)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
Extension of program to include two additional program years (Estimating)	+10.2	+16.2
Rescope of program support to match budget adjustments (Estimating)	+5.0	+7.4
RDT&E Subtotal	+15.4	+23.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-9.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	-7.9
Total Variance associated with increase from 78 to 83 systems.	+40.1	+57.2

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity Variance resulting from increase from 78 to 83 systems. (Quantity)	+0.2	+0.3
Schedule Variance resulting from Quantity Increase. (Schedule)	+18.5	+33.6
Engineering Variance resulting from Quantity Increase. (Engineering)	+21.4	+23.3
Change in buy profile due to accelerated procurement of final variant upgrades. (Schedule)	--	+41.3
Adjustment for Current & Prior Inflation. (Estimating)	+3.7	+4.7
Extension of program through FY01 (Estimating)	+17.5	+27.1
Rescope of in-house production engineering, consulting svcs, and system tech support due to budget constraints (Estimating)	-32.3	-41.1
Savings due to earlier procurement of equipment (Estimating)	-32.7	-84.2
Adjustment for Current & Prior Inflation. (Support)	+1.5	+1.8
Change in program spares budget. (Support)	-0.1	+0.3
Reduction in trainer system components budget. (Support)	-1.5	-2.1
Increase in system technical support associated with extension of program through FY01. (Support)	+30.2	+49.2
Procurement Subtotal	+26.4	+37.2
(3) <u>MILCON</u>		
Estimating adjustment (Estimating)	+0.1	+0.1

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
34.563	0.705	2.496	7.812	5.128	-0.822	--	-3.127	12.192	46.755

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

The EMSP software contract N00024-92-C-6316 is not reported because it is not a major contract.

a. (U) Procurement --

(U) <u>AN/SQQ-89 ASW COMBAT SYS:</u>	<u>Target</u>	<u>Initial Contract Price Ceiling</u>	<u>Qty</u>
General Electric, Syracuse, NY			
N00024-88-C-6219, FFP	\$276.9	N/A	14
Award: July 1, 1988			
Definitized: July 1, 1988			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$611.1	N/A	18	\$611.4	\$611.4

Explanation of Change:

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

All ship systems have been delivered. This contract is over 90% complete and will not be reported in future SAR.

(U) <u>AN/SQQ-89 ASW COMBAT SYS:</u>	<u>Target</u>	<u>Initial Contract Price Ceiling</u>	<u>Qty</u>
Westinghouse Electric Co., Sykesville, MD			
N00024-90-C-6013, FFP	\$177.6	N/A	7
Award: June 1, 1990			
Definitized: June 1, 1990			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$202.3	N/A	7	\$202.3	\$202.3

Explanation of Change:

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

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

All ship systems have been delivered. This contract is over 90% complete and will not be reported in future SAR.

(U) AN/SQQ-89 ASWCS:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric Co., Syracuse, NY			
N00024-91-C-6309, FFP	\$138.1	N/A	7
Award: February 15, 1991			
Definitized: February 15, 1991			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$138.1	N/A	7	\$138.1	\$138.1

Explanation of Change:

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

All major systems have been delivered. This contract is over 90% complete and will not be reported in future SAR.

(U) AN/SQQ-89 ASWCS:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Westinghouse Electric Co., Sykesville, MD			
N00024-92-C-6300, FFP	\$143.2	N/A	7
Award: September 11, 1992			
Definitized: September 11, 1992			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$233.3	N/A	12	\$233.3	\$233.3

Explanation of Change:

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

PMO411 exercised the FY94 option on February 15, 1994 to procure three AN/SQQ-89(V)6 systems; three AN/SQS-53C(V)3 upgrades, three Torpedo Setting Panels and one AN/SQS-53C Maintenance Trainer.

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

(U) AIDS DEVELOPMENT: Diagnostic Retrieval Sys, Oakland, NJ N00024-92-C-6308, CPIF/FFP Award: April 15, 1992 Definitized: April 15, 1992	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$85.0	N/A	38

Current Contract Price	Estimated Price At Completion	
	<u>Contractor</u>	<u>Program Manager</u>
<u>Target</u> \$84.1	<u>Ceiling</u> N/A	<u>Qty</u> 38
	\$84.1	\$84.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.3	\$-1.0
Cumulative Variances To Date (12/12/94)	\$-1.3	\$-0.2
Net Change	\$-1.0	\$0.8

Explanation of Change: None.

This contract consists of a definitized \$19.1M cost-plus incentive fee (CPIF) development effort and a \$65.0M firm-fixed price (FFP) procurement portion.

DRS is conducting formal testing, which is expected to be completed in March 1995. Phase I of the Test Readiness Review was held December 7, 1994. The Production Readiness Review was held December 13-15, 1994.

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

a. (U) Program Status --

- (1) Percent Program Completed: 77.8% (21 yrs/27 yrs)
- (2) Percent Program Cost Appropriated: 94.7% (\$3673.7 / \$3880.7)

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

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

<u>Appropriation</u>	<u>Prior Years (FY75-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	995.8	10.0	6.1	29.3	1041.2
Procurement	2588.6	31.4	31.3	98.9	2750.2
MILCON	4.5	-	-	-	4.5
O&M	84.8	-	-	-	84.8
Total	3673.7	41.4	37.4	128.2	3880.7

c. (U) Annual Summary --

<u>Fiscal</u>	<u>Qty</u>	<u>Flyaway FY85 Dollars</u>	<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>	<u>Escl Rate (%)</u>	
<u>Year</u>		<u>Nonrec</u>	<u>Rec</u>	<u>Program</u>	<u>Oblig- ated</u>	<u>Ex- pended</u>

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
1977			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
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

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

Fiscal Year	Qty	Flyaway FY85 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)

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	119.9	108.2	4.3
1992				54.1	69.6	69.5	66.8	2.8
1993				12.8	16.9	16.9	14.7	2.7
1994				17.0	22.9	21.8	10.2	2.0
1995				11.4	15.8	1.0		2.7
1996				7.0	10.0			3.0
1997				4.1	6.1			3.0
1998				4.5	6.9			3.0
1999				4.0	6.2			3.0
2000				5.0	8.1			3.0

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AN/SQQ-89 ASWCS, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblif- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2001				4.9	8.1			3.0
Subtot				1071.1	1041.2	979.6	950.4	

Appropriation: 1810 Other Procurement, Navy

1979			0.6	0.9	0.7	0.7	0.7	8.7
1980			2.5	2.7	2.3	2.3	2.3	10.6
1981			3.8	3.9	3.6	3.6	3.6	10.6
1982			33.5	39.4	37.6	37.6	37.6	7.6
1983	2	6.0	72.1	124.7	123.4	123.4	123.4	4.9
1984	8	10.9	151.9	264.8	269.7	269.7	269.7	3.8
1985	7	7.7	137.4	234.1	245.5	245.5	245.5	3.4
1986	11	5.9	135.2	216.0	234.4	234.4	234.4	2.8
1987	6	10.7	133.1	211.7	238.0	238.0	238.0	2.7
1988	3	9.4	111.0	139.4	164.0	163.9	163.9	3.0
1989	4	34.3	137.6	186.5	227.7	225.6	213.8	4.2
1990	2	13.1	122.7	152.0	191.7	191.6	176.5	4.0
1991	3	63.8	116.9	216.7	278.4	276.5	236.4	4.3
1992	9	3.4	156.7	189.1	251.3	249.6	207.2	2.8

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AN/SQQ-89 ASWCS, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1993	17	1.0	68.9	97.9	132.0	130.3	97.7	2.7
1994	4	0.9	57.7	72.7	100.7	93.8	30.3	2.0
1995	3	1.5	42.9	61.5	87.6	14.4		2.7
1996	4		5.5	21.4	31.4			3.0
1997		0.1	7.6	20.7	31.3			3.0
1998			2.9	11.6	18.0			3.0
1999		0.7	5.2	17.3	27.7			3.0
2000		0.2	8.5	15.9	26.3			3.0
2001		0.2	8.5	15.8	26.9			3.0
Subtot	83	169.8	1522.7	2316.7	2750.2	2500.9	2281.0	

There are currently 83 AN/SQQ-89s in the Fleet attributed to OPN with 11 configuration variants. The last major system was procured in FY92 and installed in FY95. Each system will receive several incremental upgrades as part of a continuing program depending upon its current configuration. Each ship, shore site, or trainer was counted at the time its last OPN-funded upgrade was procured. FY97-01 costs provide upgrades which do not result in additional SQQ-89s and thus there are no associated quantities. Funding levels beyond FY01 are unknown and will be included as part of the POM 98 process.

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AN/SQQ-89 ASWCS, December 31, 1994

16c. (U) 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: 1205 Military Construction, Navy

1982				2.7	2.6	2.5	2.5	7.6
1983				1.9	1.9	1.9	1.9	4.9
Subtot				4.6	4.5	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	83	169.8	1522.7	3471.7	3880.7	3569.7	3320.6	

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AN/SQQ-89 ASWCS, December 31, 1994

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	0/0
Procurement	63/63

The AN/SQQ-89 ship systems are counted as being delivered at completion of installation and checkout. Procurement deliveries reflect OPN systems only. There are 21 delivered SCN systems. 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 completed installation and checkout prior to December 31, 1994. The balance of OPN systems to be delivered is 41. The balance of SCN systems is 45.

b. (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 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.

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AN/SQQ-89 ASWCS, December 31, 1994

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

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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	35.3	3.0	3.0	12.0	53.3
Total	35.3	3.0	3.0	12.0	53.3

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N-32 TOMAHAWK

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(06A)823)
PROGRAM: TOMAHAWK (R/UGM-109)

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
Cover Sheet Information		1
Mission and Description		2
Program Highlights		3
Threshold Breaches		5
Schedule		5
Performance Characteristics		7
Total Program Cost and Quantity		11
Unit Cost Summary		13
Cost Variance Analysis		14
Program Acquisition Unit Cost History		21
Contract Information		22
Program Funding Summary		23
Production Rate Data		33
Operating and Support Costs		33

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 and Joint Assigned: February 8, 1991
Unmanned Aerial Vehicles AV 664-1088 COMNAV 703-604-1088
Arlington, VA 22246-
4. (U) Program Elements/Procurement Line Items:

RD&E:

PE 0604367N Project W1784
PE 0204229N Project W0545

AS AMENDED
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~~Declassify on: OADR~~

~~Downgrade Instructions: N/A~~

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AND JOINT CHIEFS OF STAFF (SFA)
DEPARTMENT OF THE NAVY

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TOMAHAWK (R/UGM-109), December 31, 1994

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

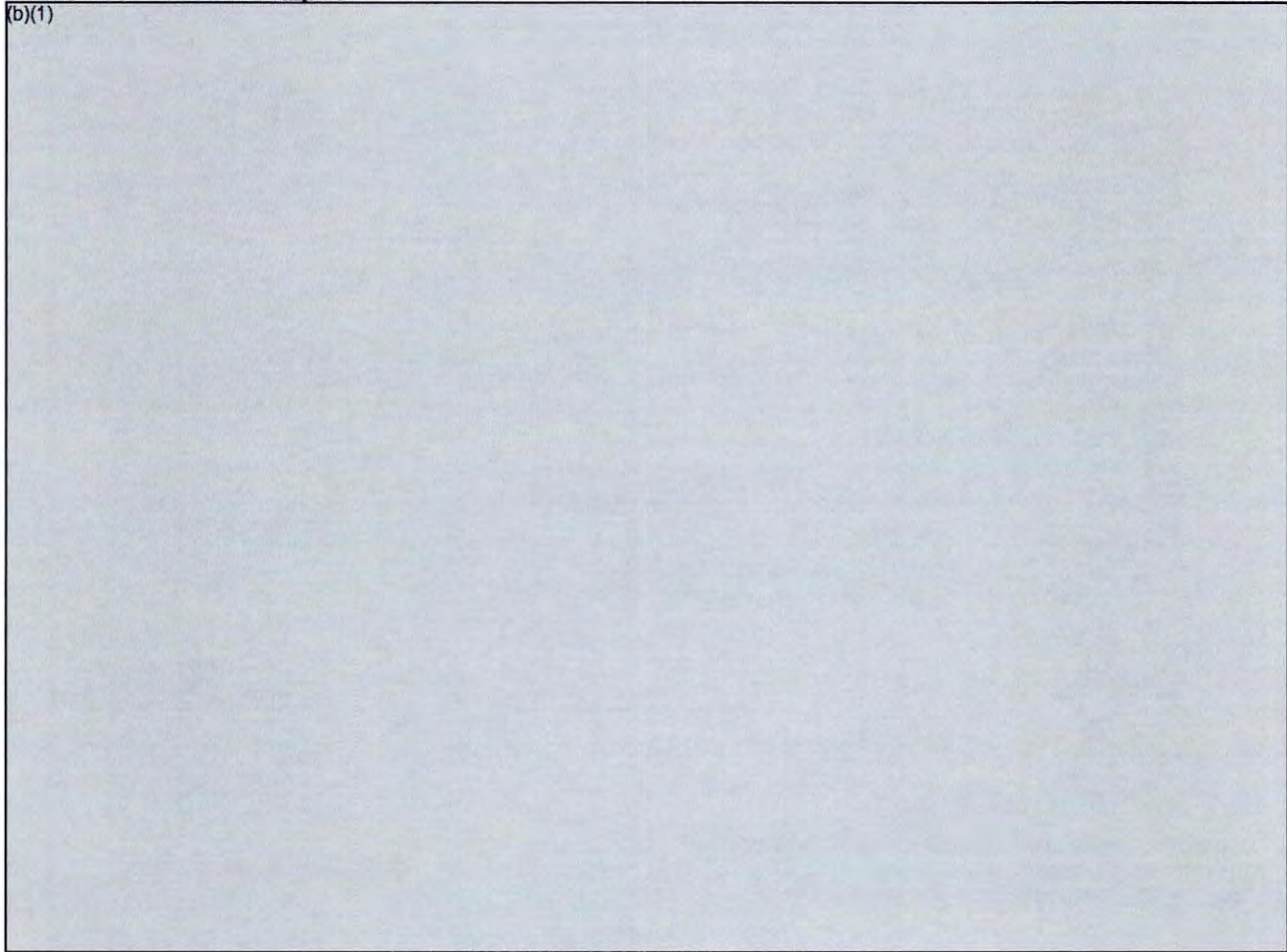
PROCUREMENT:

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.

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TOMAHAWK (R/UGM-109), December 31, 1994

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

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

8. (U) Threshold Breaches:

There are no breaches to the approved DAE Acquisition Program Baseline (APB) dated 16 September 1994, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

TOMAHAWK

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
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
NFDM			
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	MAY 93 (Ch-1)
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

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TOMAHAWK (R/UGM-109), December 31, 1994

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

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
TMPC(U)	N/A	MAR 93	MAY 93
APS	N/A	JUN 93	SEP 93

b. (U) Previous Change Explanations --

Conventional Dispenser Variant OPEVAL completion was delayed from 7/87 to 5/88 due to ship availability and delay in missile delivery due to hardware availability. OPEVAL delays led to the NPDM delay from 12/87 to 8/88. IOC delays for Block IIB were caused by OPEVAL testing difficulties. IOC Block III AUR changed from March 1993 to April 1993 due to ship installation schedules. IOC for APS changed from August 1993 to September 1993 due to Ada and COTS software problems.

c. (U) Current Change Explanations --

(Ch-1) Land Attack Conventional Block III AUR changed from Apr 93 to May 93 to reflect actual date of accomplishment. This change had not been reported in Dec 93 SAR.

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 September 16, 1994.

TOMAHAWK TRIP

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IV/II Development Contract Award	N/A	SEP 94	SEP 94
Tomahawk Multi-Mission Missile (TMM) Development Flight Test			

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TOMAHAWK (R/UGM-109), December 31, 1994

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b. (U) Previous Change Explanations — Initial reporting.

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

(U) Approved Program:

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TOMAHAWK (R/UGM-109) December 31, 1994

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b. (U) Previous Change Explanations —

Changes for Terminal Accuracy, Mission Reliability, Dispense Reliability and Mission Success are based on the aggregate results of on-going flight test demonstration and storage data 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) Range Operational, TLAM/D, UGM-109d, Block III changed from N/A to TED.

(Ch-2) Changes in Mission Reliability - TLAM-N/RGM/UGM-109A, TLAM-C/RGM-109C, UGM-109C; TLAM-D/RGM-109D/UGM-109D; TASM/UGM-109B;

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TOMAHAWK (R/UGM-109), December 31, 1994

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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:

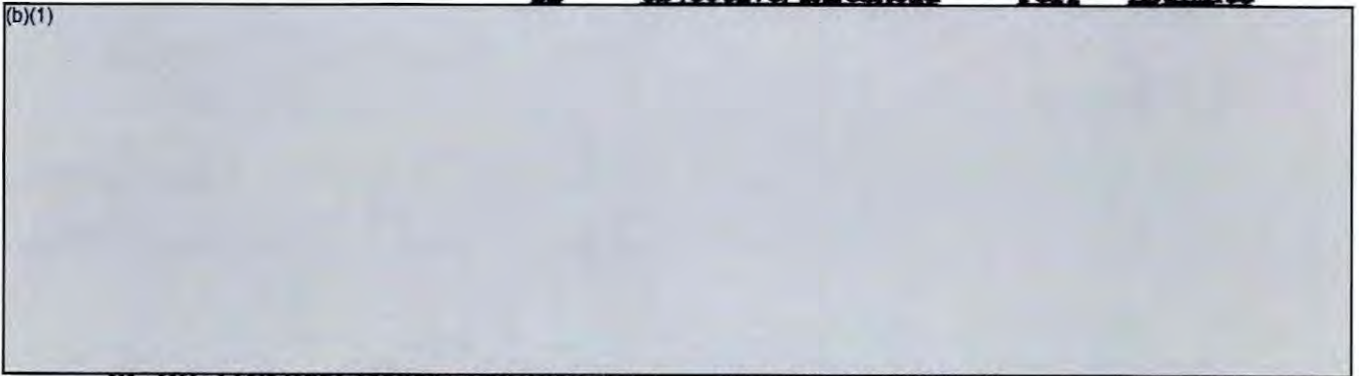
NAE Approved Acquisition Program Baseline dated September 16, 1994.

TOMAHAWK TBIP

a. (U) Performance —

DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

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TOMAHAWK (R/UGM-109), December 31, 1994

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Flyaway consists of only Air Vehicle (Flyaway). Other Weapon System consists of Launch/Fire Control Costs.

b. (U) Quantity —

Development (RDT&E)	81	74	74
Procurement	1082	4568	4365
Total	1163	4642	4439

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

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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 September 16, 1994.

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TOMAHAWK (R/UGM-109), December 31, 1994

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

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost —			
Development (RDT&E)	288.8	288.8	287.9
Procurement	544.2	544.2	532.7
Total Flyaway	(440.0)		(436.9)
Other Procurement Costs	(51.3)		(53.7)
Peculiar Support	(32.2)		(26.4)
Initial Spares	(20.7)		(15.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (OGM)	0.0	0.0	0.0
Total FY 77 Base-Year \$	833.0	833.0	820.6
Escalation	1781.3	1781.3	1758.1
Development (RDT&E)	(456.9)	(456.9)	(457.8)
Procurement	(1324.4)	(1324.4)	(1300.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (OGM)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2614.3	2614.3	2578.7
b. (U) Quantity —			
Development (RDT&E)	0	0	N/A
Procurement	1181	1181	1181
Total	1181	1181	1181

Note: Procurement quantities consist of re-manufacture of Block II missiles.

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

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

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TOMAHAWK (R/UGM-109), December 31, 1994

12. (U) Unit Cost Summary:

TOMAHAWK

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY77\$)	5398.2	5537.6	
(2) Quantity	4439	4642	
(3) Unit Cost	1.216	1.193	1.941
b. (U) Procurement			
(1) Cost (BY77\$)	4020.2	4189.8	
(2) Quantity	4365	4568	
(3) Unit Cost	0.921	0.917	0.414

Note: Unit cost calculations include dollars for remanufacture program, but not quantities.

TOMAHAWK TBIP

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY77\$)	820.6	833.0	
(2) Quantity	1181	1181	
(3) Unit Cost	0.695	0.705	-1.489
b. (U) Procurement			
(1) Cost (BY77\$)	532.7	544.2	
(2) Quantity	1181	1181	
(3) Unit Cost	0.451	0.461	-2.113

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TOMAHAWK (R/UGM-109), December 31, 1994

13. (U) Cost Variance Analysis:
TOMAHAWK

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	866.1	1556.8	0.0	2422.9
Previous Changes:				
Economic	+4.3	-1670.5	+2.1	-1664.1
Quantity	-22.6	+8414.1	-	+8391.5
Schedule	+211.6	-96.6	-	+115.0
Engineering	+769.9	+1567.5	-	+2337.4
Estimating	+110.3	-1878.0	+73.6	-1694.1
Other	-	-	-	-
Support	+2.9	+2057.5	+0.5	+2060.9
Subtotal	+1076.4	+8394.0	+76.2	+9546.6
Current Changes:				
Economic	-4.3	-25.5	-	-29.8
Quantity	-	-263.6	-	-263.6
Schedule	-	5.7	-	+5.7
Engineering	-	-	-	-
Estimating	0.8	-367.4	-	-366.6
Other	-	-	-	-
Support	-	89.8	-	+89.8
Subtotal	-3.5	-561.0	-	-564.5
Total Changes	+1072.9	+7833.0	+76.2	+8982.1
Current Estimate	1939.0	9389.8	76.2	11405.0

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TOMAHAWK (R/UGM-109), December 31, 1994

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

a. (U) Summary (FY 1977 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	782.8	1023.6	0.0	1806.4
Previous Changes:				
Quantity	-17.5	+2901.9	-	+2884.4
Schedule	+148.5	-311.7	-	-163.2
Engineering	+400.5	+620.8	-	+1021.3
Estimating	+29.2	-798.2	+31.7	-737.3
Other	-	-	-	-
Support	+2.1	+753.4	+0.4	+755.9
Subtotal	+562.8	+3166.2	+32.1	+3761.1
Current Changes:				
Quantity	-	-82.3	-	-82.3
Schedule	-	1.6	-	+1.6
Engineering	-	-	-	-
Estimating	0.3	-118.4	-	-118.1
Other	-	-	-	-
Support	-	29.5	-	+29.5
Subtotal	+0.3	-169.6	-	-169.3
Total Changes	+563.1	+2996.6	+32.1	+3591.8
Current Estimate	1345.9	4020.2	32.1	5398.2

Note: The Tomahawk Baseline Improvement Program (TBIP) program has been removed from previous changes above and transferred to the TBIP end item in this SAR. This became a part of the TBIP baseline.

b. (U) Previous Change Explanations —

RDTE

Economic: Revised economic escalation indices. Economic adjustment for negative program change.

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

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TOMAHAWK (R/UGM-109), December 31, 1994

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

TOMAHAWK

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 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. Congressional increase for engine. Hard Target Penetrator. Tomahawk Baseline Improvement Program addition.

Estimating: Revised estimate to offset economic indicies. Addition of Theater Mission Planning System development caused by program restructuring. Revised program estimate. Adjustment for current/prior inflation and travel (pro-rata share). Congressional Adjustment for TMPC and DBOF rate reduction. TMPCU/APS TSCM enhancements and SBIR.

Support: To fund the first surface ship fire control system trainer from RDT&E.

Procurement

Economic: Revised economic escalation indicies. Economic adjustment for negative program change.

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. Variance resulting from increase of 520 units from 4048 to 4568.

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. Changes in procurement

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TOMAHAWK (R/UGM-109), December 31, 1994

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

buy schedule.

Engineering: Requirements to use Armored Boxed Launcher vice canister 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. Engineering variance resulting from quantity allocation.

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 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 affordability 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. Adjustment for current/prior inflation and pricing (pro-rata share). ILS Integrator savings. Installation Annualization. Transfer Warfare/Eng Centers. Economic procurement/Mods reprogramming, DBOF pricing and rate reduction, BSO realignment. Correction to align flyaway and support costs.

Support: Support equipment and initial spares associated with missile quantity changes. Schedule rephasing of associated missile support equipment, spares and Common Weapon Control System (CWCS) spares.

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TOMAHAWK (R/UGM-109), December 31, 1994

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

TOMAHAWK

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. Adjustment for current and prior inflation. Correction to align flyaway and support costs.

MILCON

Economic: Revised economic escalation indices.
Estimating: Economic Adjustment. Additional missile magazines. Revised project estimates. Adjustment for current and prior inflation.
Support: Revised project estimates.

c. (U) Current Change Explanations —

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>ROT&E</u>		
Revised escalation indices. (Economic)	N/A	-4.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.8
ROT&E Subtotal	+0.3	-3.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-25.5
Quantity Variance resulting from decrease of 203 units in Weapons Procurement (Quantity)	-82.3	-263.6
Engineering Variance resulting from Quantity Allocation in Weapons Procurement (Schedule)	-52.8	-153.6
Addition of FY00 and FY01 program years in Other Procurement (Schedule)	+54.4	+159.3
Result of AUR contract savings from awarding a competitive single-up contract with Hughes Missile Systems Company (HMSC). (Estimating)	-118.4	-367.4
Initial spares re-estimate. (Support)	+14.3	+43.3
Peculiar Support re-estimate (Support)	+15.0	+46.1

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TOMAHAWK (R/UGM-109), December 31, 1994

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
	+0.2	+0.4
Adjustment for Current & Prior Inflation. (Support)		
Procurement Subtotal	-169.6	-561.0

TOMAHAWK TRIP

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	745.7	1868.6	0.0	2614.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-3.7	-14.6	-	-18.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	3.7	-11.5	-	-7.8
Other	-	-	-	-
Support	-	-9.5	-	-9.5
Subtotal	-	-35.6	-	-35.6
Total Changes	-	-35.6	-	-35.6
Current Estimate	745.7	1833.0	-	2578.7

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TOMAHAWK (R/UGM-109), December 31, 1994

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

a. (U) Summary (FY 1977 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	288.8	544.2	0.0	833.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.9	-3.0	-	-3.9
Other	-	-	-	-
Support	-	-8.5	-	-8.5
Subtotal	-0.9	-11.5	-	-12.4
Total Changes	-0.9	-11.5	-	-12.4
Current Estimate	287.9	532.7	-	820.6

b. (U) Previous Change Explanations — None.

c. (U) Current Change Explanations —

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E		
Revised escalation indices. (Economic)	N/A	-3.7
Adjustment for Current & Prior Inflation. (Estimating)	-0.9	+3.7
RD&E Subtotal	-0.9	=

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TOMAHAWK (R/UGM-109), December 31, 1994

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

(Dollars in Millions)
Base-Year Then-Year

(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-14.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.2
Revised estimates to delete Modification End Item (Estimating)	-5.3	-14.0
Adjustment for Current & Prior Inflation. (Estimating)	N/A	+0.1
Increased estimates to reflect revised escalation indices (Estimating)	+2.3	+2.4
Decreased estimates to reflect revised inflation indices in support costs (Support)	-8.5	-9.5
Procurement Subtotal	-11.5	-35.6

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

TOMAHAWK

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.083	-0.382	0.293	0.027	0.527	-0.464	--	0.485	0.486	2.569

TOMAHAWK TRIP

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.214	-0.015	-0.001	--	--	-0.007	--	-0.008	-0.031	2.183

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Contracts N00019-88-C-3128, N000-19-89-C-0092, N00019-91-C-0002, N00019-91-C-0092 and N00019-92-C-0115 are more than 90% complete and will no longer will be reported.

a. (U) Procurement —			
(U) FY93 AUR:		Initial Contract Price	
Hughes Missile Systems Co, San Diego, CA	Target	Ceiling	Qty
N00019-93-C-0045, FFP	\$154.1	N/A	80
Award: January 8, 1993			
Definitized: January 8, 1993			
	Current Contract Price	Estimated Price At Completion	
	Target Ceiling Qty	Contractor Program Manager	
	\$154.1 N/A 80	\$154.1 \$154.1	

Explanation of Change:

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

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

(U) FY93 AUR:			
McDonnell Douglas Corp, St Louis, MO	Target	Initial Contract Price Ceiling	Qty
N00019-93-C-0046, FFP	\$201.9	N/A	120
Award: January 8, 1993			
Definitized: January 8, 1993			
	Current Contract Price	Estimated Price At Completion	
	Target Ceiling Qty	Contractor Program Manager	
	\$201.9 N/A 120	\$201.9 \$201.9	

Explanation of Change:

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

(U) FY94 AUR:			
Hughes Missile Systems Co, Tucson, AR	Target	Initial Contract Price Ceiling	Qty
N00019-94-C-0257, FFP	\$0.0	N/A	216
Award: September 16, 1994			
Definitized: September 16, 1994			

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$0.0	N/A	216	\$130.3	\$130.3

Explanation of Change:

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

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

(U) FY94 TBIP: Hughes Missile Systems Co, Tucson, AR N00019-94-C-0258, CPIC/AF Award: September 16, 1994 Definitized: September 16, 1994	Initial Contract Price		
	Target	Ceiling	Qty
	\$226.5	N/A	N/A

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$226.5	N/A	N/A	\$256.3	\$256.3

	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: None.

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

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

a. (U) Program Status —

Total Program

- (1) Percent Program Completed: 73.3% (22 yrs/30 yrs)
- (2) Percent Program Cost Appropriated: 75.3% (\$10536.5 / \$13983.7)

TOMAHAWK

- (1) Percent Program Completed: 78.6% (22 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 91.5% (\$10434.6 / \$11405.0)

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TOMAHAWK (R/UGM-109), December 31, 1994

TOMAHAWK THIP

(1) Percent Program Completed: 20.0% (2 yrs/10 yrs)

(2) Percent Program Cost Appropriated: 4.0% (\$101.9 / \$2578.7)

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

<u>Total Program</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY74-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2003)	<u>Total</u>
RDT&E	1964.0	141.4	182.3	397.0	2684.7
Procurement	8525.3	242.6	264.8	2190.1	11222.8
MILCON	47.2	-	-	29.0	76.2
O&M	-	-	-	-	-
Total	10536.5	384.0	447.1	2616.1	13983.7

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

<u>TOMAHAWK</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY74-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	1869.4	21.0	18.6	30.0	1939.0
Procurement	8518.0	232.4	234.2	405.2	9389.8
MILCON	47.2	-	-	29.0	76.2
O&M	-	-	-	-	-
Total	10434.6	253.4	252.8	464.2	11405.0

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TOMAHAWK (R/UGM-109), December 31, 1994

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

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

TOMAHAWK TRIP	Prior Years (FY94-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2003)	Total
Appropriation					
RDT&E	94.6	120.4	163.7	367.0	745.7
Procurement	7.3	10.2	30.6	1784.9	1833.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	101.9	130.6	194.3	2151.9	2578.7

c. (U) Annual Summary — TOMAHAWK

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
1980				77.5	105.4	105.4	105.4	10.6
1981				90.2	133.8	133.8	133.8	10.6

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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				41.6	76.8	76.8	76.3	2.7
1988				36.4	69.5	69.3	66.8	3.0
1989				28.5	56.7	56.3	55.9	4.2
1990				23.2	48.0	47.9	47.8	4.0
1991				21.2	45.4	45.3	44.3	4.3
1992				27.5	60.7	60.7	60.7	2.8
1993				13.5	30.6	30.6	29.5	2.7
1994				8.7	20.1	20.1	13.7	2.0
1995				5.5	13.0	7.5		2.7
1996				8.6	21.0			3.0
1997				7.4	18.6			3.0
1998				3.7	9.5			3.0
1999				3.6	9.6			3.0

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2000				2.1	5.7			3.0
2001				1.8	5.2			3.0
Subtot	74			1345.9	1939.0	1863.1	1843.6	

Appropriation: 1507 Weapons Procurement, Navy

1980	6	1.6	13.5	22.5	34.6	34.6	34.6	11.8
1981	50	13.8	69.8	100.1	171.7	171.7	171.7	11.6
1982	61	15.5	89.7	119.0	221.6	221.6	221.6	14.3
1983	51	14.1	84.1	111.2	218.9	218.9	218.9	9.0
1984	124	20.2	121.4	167.6	343.3	343.3	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	236.0	323.7	731.6	731.6	722.4	2.7
1988	475	37.3	283.5	359.8	845.0	844.6	840.6	3.0
1989	510	51.2	194.3	280.8	685.4	685.4	674.8	4.2
1990	400	50.0	186.8	238.0	601.2	600.8	587.5	4.0
1991	678	36.6	348.5	414.2	1073.5	1072.4	1063.5	4.3
1992	176	47.8	101.5	161.0	428.7	428.7	405.9	2.8

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1993	200	38.4	108.0	156.0	425.0	422.4	223.8	2.7
1994	216	21.0	66.4	94.0	263.0	214.4	35.5	2.0
1995	217	21.3	55.2	84.6	243.9	141.8	0.9	2.7
1996	164	12.1	40.9	56.5	167.7			3.0
1997	164	8.3	39.7	52.5	160.5			3.0
1998	120	29.2	21.7	41.9	131.9			3.0
1999								3.0
2000								3.0
2001								3.0
Subtot	4365	526.8	2472.9	3365.5	7997.7	7382.4	6795.1	

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				72.7	123.7	123.7	123.7	4.9
1984				35.0	61.4	61.4	61.4	3.8
1985				44.2	79.8	79.8	78.9	3.4
1986				56.0	104.6	104.6	104.6	2.8

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TOMAHAWK (R/UGM-109), December 31, 1994

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

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)

1987				54.6	105.7	105.7	104.2	2.7
1988				27.0	54.6	54.6	54.6	3.0
1989				17.6	36.9	36.9	36.9	4.2
1990				25.7	55.8	55.2	51.2	4.0
1991				10.8	23.8	23.6	21.8	4.3
1992				26.3	60.2	59.7	59.3	2.8
1993				25.5	59.1	55.2	41.9	2.7
1994				21.7	51.6	47.0	20.2	2.0
1995				27.6	67.8	25.9	0.2	2.7
1996				25.6	64.7			3.0
1997				28.3	73.7			3.0
1998				12.9	34.6			3.0
1999				28.8	79.4			3.0
2000				29.4	83.5			3.0
2001				25.9	75.8			3.0
Subtot				654.7	1392.1	928.7	854.3	

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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
1986								2.8
1987				1.9	3.7	3.7	3.7	2.7
1988								3.0
1989				4.1	8.5	8.5	8.5	4.2
1990				2.1	4.6	4.6	1.6	4.0
1991				5.0	11.1	11.1	10.1	4.3
1992				8.2	18.8	10.7	10.3	2.8
1993								2.7
1994								2.0
1995								2.7
1996								3.0
1997								3.0
1998				3.7	10.0			3.0
1999				6.8	19.0			3.0

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

2000								3.0
2001								3.0
Subtot				32.1	76.2	39.1	34.7	
Grand Total	4439	526.8	2472.9	5398.2	11405.0	10213.3	9527.7	

c. (U) Annual Summary — TOMAHAWK THIP

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1994				10.2	23.6	23.6	10.5	2.0
1995				29.8	71.0	51.0	3.3	2.7
1996				49.1	120.4			3.0
1997				64.8	163.7			3.0
1998				42.5	110.7			3.0
1999				22.1	59.3			3.0
2000				26.4	72.9			3.0

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2001				22.9	65.2			3.0
2002				20.1	58.9			3.0
Subtot				287.9	745.7	74.6	13.8	

Appropriation: 1507 Weapons Procurement, Navy

1998	50	4.6	17.8	24.9	78.5			3.0
1999	50	4.2	16.3	31.7	102.9			3.0
2000	200	15.9	61.5	29.2	97.4			3.0
2001	295	22.4	86.3	29.1	100.2			3.0
2002	295	21.8	84.0	184.7	654.8			3.3
2003	291	21.0	81.1	179.4	654.9			3.0
Subtot	1181	89.9	347.0	479.0	1688.7			

Appropriation: 1810 Other Procurement, Navy

1994				0.9	2.1			
1995				2.1	5.2			2.7
1996				4.0	10.2			3.0
1997				11.8	30.6			3.0

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TOMAHAWK (R/UGM-109), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1998				15.6	41.9			3.0
1999				10.1	28.0			3.3
2000				8.5	24.3			3.0
2001				0.7	2.0			3.0
Subtot				53.7	144.3			
Grand Total	1181	89.9	347.0	820.6	2578.7	74.6	13.8	

17. (U) Production Rate Data:

TOMAHAWK

a. (U) Deliveries (Plan/Actual) —
RD&E
Procurement
To Date
74/74
3362/3368

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

TOMAHAWK TRIP

a. (U) Deliveries (Plan/Actual) — None.

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

18. (U) Operating and Support Costs:
TOMAHAWK

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TOMAHAWK (R/UGM-109), December 31, 1994

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

a. (U) Assumptions and Ground Rules —

The Operating and Support costs are based on annual averages derived from an thirteen year period from FY89 through FY01.

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 recertifications peak at an average 355 per year in FY99 through FY01.

An operational flight test program is conducted to determine operational readiness and aging effects of the deployed weapons system and to provide fleet training. Operational flight tests are currently scheduled at the rate of 8 per year.

The software support activity includes 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 134 platforms per year.

There is no antecedent system.

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TOMAHAWK (R/UGM-109), December 31, 1994

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

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	7.8	N/A
Depot Maintenance	15.8	N/A
Software Support Program	5.6	N/A
Technical/Ops Support	6.8	N/A
Platform Maintenance	1.2	N/A
Theater Mission Planning	6.2	N/A
Total	43.4	N/A

Costs reflect revised Program office estimates as of January 1995.

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	32.6	2.2	2.2	11.0	48.0
Total	32.6	2.2	2.2	11.0	48.0

TOMAHAWK THIP

a. (U) Assumptions and Ground Rules —

THIP, as currently planned, will not increase the O&S costs of the Tomahawk system because there will be no net increase to inventory. THIP assets will be remanufactured from older, existing Tomahawk missiles. There will be some decrease in Depot Maintenance costs because THIP will have a ten year recertification interval. As currently planned, the first THIP recertification would not occur

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TOMAHAWK (R/UGM-109), December 31, 1994

18a. (U) Operating and Support Costs (Cont'd):
TOMAHAWK TSIP
until FY2009.

b. (U) Costs — None.

c. (U) Contractor Support Costs — None.

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A-8 BLACKHAWK (UH-60L)

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

PROGRAM: UH-60A/L BLACK HAWK

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

UH-60L BLACK HAWK

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Utility Helicopters Project Mgr. Off COL Chester Rees Jr.

ATTN: SFAE-AV-BH

Assigned: June 1, 1993

4300 Goodfellow Blvd

AV 693-1700 COMM (314) 263-1700

St. Louis, MO 63120-1798

4. Program Elements/Procurement Line Items:

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

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.

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95-0871

UH-60A/L BLACK HAWK, December 31, 1994

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 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.

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UH-60A/L BLACK HAWK, December 31, 1994

7a. Program Highlights (Cont'd):

The multiyear III airframe contract for FY88-91 to procure 252 UH-60s was fully executed with an additional 36 UH-60Ls 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 incorporation 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 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.

An FY92-96 airframe multiyear contract for an additional 300 UH-60L aircraft was awarded in April, 1992. Congress split funding for the FY93 quantity of 60 aircraft between the Army (52 aircraft) and the National Guard (8 aircraft). Deliveries on this contract will conclude in June of 1997. Total deliveries of the UH-60A and the UH-60L at the conclusion of this contract will be 1,450--726 short of the requirement contained in the Army Aviation Modernization Plan.

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.

b. Significant Developments Since Last Report --

Following the deletion of funding for the final year of the airframe multiyear contract (FY96), the FY95 Advance Procurement request was reduced from \$140.2M to \$70.0M. The airframe contract is being modified to accommodate this reduction. Funding for the procurement of 60 aircraft in FY96 has since been reinstated. Production funds included in FY97 are being requested to complete the fielding of previously procured aircraft, and to shut down the production line. This report shows no aircraft procurement beyond FY97. While the

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UH-60A/L BLACK HAWK, December 31, 1994

7b. Program Highlights (Cont'd):

FYDP indicates funding for additional aircraft procurement in the outyears, the current Army plan, as reflected in budget justification data (P Forms) and the Extended Planning Annex (EPA), indicate no further procurement plans.

A single year engine contract with option prices through CY97 was awarded on April 15, 1994, in lieu of the multiyear contract initially planned.

The BLACK HAWK 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 approved Acquisition Program Baseline (APB) dated July 12, 1993 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Multiyear Airframe Contract Award (FY 88-91)	JAN 88	JAN 88	JAN 88
Multiyear Engine Contract Award (FY 89-93)	NOV 88	NOV 88	NOV 88
Approval of Revised UH-60 Procurement Objective (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

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UH-60A/L BLACK HAWK, December 31, 1994

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	AUG 90	AUG 90
2-82ns Aslt -- Ft Bragg, NC	N/A	DEC 90	DEC 90
E-149th Aslt TX ARNG -- Austin, TX	N/A	FEB 91	FEB 91
1-151st AHB SC ARNG -- Eastover, SC	N/A	MAR 91	MAR 91
1-111th AHB FL ARNG--Jacksonville, FL	N/A	APR 91	APR 91
1-207th Aslt AK ARNG--Ft Richardson, AK	N/A	MAY 91	MAY 91
MDW -- Ft Belvoir, VA	N/A	MAY 91	MAY 91
1-149th AHB TX ARNG -- Houston, TX	N/A	MAY 91	MAY 91
SOCOM -- Ft Campbell, KY	N/A	JUL 91	JUL 91
E-130th AVIM NC ARNG -- Salisbury, NC	N/A	APR 92	APR 92
E-131st AVIM AL ARNG -- Birmingham, AL	N/A	JUN 92	JUN 92
SOCOM -- Ft Campbell, KY	N/A	SEP 92	SEP 92
1-17th Cav -- Ft Bragg, NC	N/A	NOV 92	NOV 92
F-149th AVIM TX ARNG -- Austin TX	N/A	NOV 92	NOV 92
101st Abn Div -- Ft Campbell, KY	N/A	DEC 93	DEC 93
MY III Engine Contract Award (FY 92)	N/A	JAN 92	JAN 92
MY IV Airframe Contract Award (FY 92)	N/A	APR 92	APR 92
Deliveries MYC 92-96 Start	N/A	APR 92	APR 92
MY III Engine Contract Award (FY 93)	N/A	NOV 92	NOV 92
MY IV Airframe Contract Award (FY 93)	N/A	NOV 92	NOV 92
MY III A/F Contract Deliveries Complete	N/A	SEP 93	JAN 94
MY IV Engine Contract Award (FY 94)	N/A	NOV 93	APR 94 (Ch-1)
MY IV Airframe Contract Award (FY 94)	N/A	NOV 93	JAN 94

b. Previous Change Explanations --

Changes to the milestones reflect the addition of events (deployments and contract awards) not included in the February 26, 1990 Acquisition Program Baseline, and the revision of contractual milestones to reflect the actual date of award, first delivery, and completion of deliveries.

c. Current Change Explanations --

(Ch-1) Contract award date changed from Mar 94 to Apr 94 to reflect April 15, 1994 contract award date.

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UH-60A/L BLACK HAWK, December 31, 1994

9d. Schedule (Cont'd):

d. References --

Development Estimate:

AAE approved Acquisition Program Baseline, dated February 26, 1990.

Approved Program:

AAE Approved Acquisition Program Baseline dated July 13, 1993.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Payload (lbs)					
Troops	11	11	/ 11	11	11
Pounds	2640	2640	/ 2640	2640	2640
Air Transportability (qty)					
C-141	N/A	2	/ 2	2	2
C-5	N/A	6	/ 6	6	6
Flight Performance with Payload					
Vertical Rate of Climb (ft/min)	785	900	/ 785	785	785
Cruise Speed (knots) (using max cont power)	150	152	/ 150	150	150
Endurance (hrs)	2.1	2.3	/ 2.1	2.1	2.1
Mission Reliability					
Probability of Success	N/A	.991	/ .987	.987	.987
Mean Time Between Maintenance 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 Manhours per Flight Hours (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.

Vertical Rate of Climb (VROC) in FPM is predicated on using 95% of

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UH-60A/L BLACK HAWK, December 31, 1994

10a. Performance Characteristics (Cont'd):

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, 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 Mission Aborts (MTBMA) in hours. The value shown is equivalent to the value for probability of success.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

AAE approved Acquisition Program Baseline, dated February 26, 1990.

Approved Program:

AAE Approved Acquisition Program Baseline dated July 13, 1993.

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UH-60A/L BLACK HAWK, December 31, 1994

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	156.1	2257.8	799.6
Airframe	(66.1)		(523.5)
Engine	(17.9)		(115.0)
Avionics	(11.9)		(21.8)
Other Flyaway	(15.5)		(58.1)
Total Flyaway	(111.4)		(718.4)
Data	(2.9)		(9.4)
Training	(0.0)		(7.7)
Other	(0.0)		(15.0)
Total Other Wpn Sys	(2.9)		(32.1)
Peculiar Support	(5.9)		(2.0)
Initial Spares	(35.9)		(47.1)
Construction (MILCON)	0.0	2.7	2.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 71 Base-Year \$	156.1	2260.5	802.3
Escalation	39.4	8610.3	2451.5
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(39.4)	(8607.5)	(2443.7)
Construction (MILCON)	(0.0)	(2.8)	(7.8)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	195.5	10870.8	3253.8

The current estimate 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	0	0
Procurement	<u>127</u>	<u>1268</u>	<u>470</u>
Total	127	1268	470

c. Foreign Military Sales/International Cooperative Programs --		
UH-L BLACK HAWK (Colombia)	2 Ea	\$16.1M

d. Nuclear Costs -- None.

e. References --

Development Estimate:

UH-60A DCP #13, June 13, 1971 and DCP#13 update, November 1, 1977.

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UH-60A/L BLACK HAWK, December 31, 1994

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

Approved Program:

AAE Approved Acquisition Program Baseline dated July 13, 1993.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUL 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY71\$)	802.3	2260.5	
(2) Quantity	470	1268	
(3) Unit Cost	1.707	1.783	-4.247
b. Procurement			
(1) Cost (BY71\$)	799.6	2257.8	
(2) Quantity	470	1268	
(3) Unit Cost	1.701	1.781	-4.455

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UH-60A/L BLACK HAWK, December 31, 1994

13. Cost Variance Analysis:

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

	RDTEB	PROC	MILCON	TOTAL
Development Estimate	0.0	195.5	0.0	195.5
Previous Changes:				
Economic	-	+1825.4	+0.7	+1826.1
Quantity	-	+3355.7	-	+3355.7
Schedule	-	+181.0	-	+181.0
Engineering	-	+107.8	+27.5	+135.3
Estimating	-	+3759.9	-17.7	+3742.2
Other	-	+1.4	-	+1.4
Support	-	+533.0	-	+533.0
Subtotal	-	+9764.2	+10.5	+9774.7
Current Changes:				
Economic	-	-1325.3	-	-1325.3
Quantity	-	-2397.7	-	-2397.7
Schedule	-	-	-	-
Engineering	-	-77.5	-	-77.5
Estimating	-	-2636.1	-	-2636.1
Other	-	-	-	-
Support	-	-279.8	-	-279.8
Subtotal	-	-6716.4	-	-6716.4
Total Changes	-	+3047.8	+10.5	+3058.3
Current Estimate	-	3243.3	10.5	3253.8

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UH-60A/L BLACK HAWK, December 31, 1994

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

a. Summary (FY 1971 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	0.0	156.1	0.0	156.1
Previous Changes:				
Quantity	-	+752.6	-	+752.6
Schedule	-	-9.4	-	-9.4
Engineering	-	+11.4	+7.8	+19.2
Estimating	-	+908.2	-5.1	+903.1
Other	-	-	-	-
Support	-	+95.9	-	+95.9
Subtotal	-	+1758.7	+2.7	+1761.4
Current Changes:				
Quantity	-	-487.8	-	-487.8
Schedule	-	-	-	-
Engineering	-	-7.0	-	-7.0
Estimating	-	-561.0	-	-561.0
Other	-	-	-	-
Support	-	-59.4	-	-59.4
Subtotal	-	-1115.2	-	-1115.2
Total Changes	-	+643.5	+2.7	+646.2
Current Estimate	-	799.6	2.7	802.3

b. Previous Change Explanations --

Procurement

Economic: Revised escalation indices.
Quantity: Quantity increase from 127 to 1147.
Schedule: Impact of stretching out, contracting, and adding skip years to the production schedule.
Engineering: More stringent requirements for protection against the electromagnetic environment (EME).
Estimating: Higher than anticipated cost for the airframe and engine as well as the procurement of a large number of mission flexibility kits.
Support: Stretch of production schedule; addition of requirements for flight simulators, PMO and matrix support cost, and fielding; increased requirements

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UH-60A/L BLACK HAWK, December 31, 1994

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

for trainers; reduction in requirements for data,
PGSE, and initial spares.

MILCON

Engineering: Revised number of flight simulator facilities
allocated to the UH-60L BLACK HAWK.

Estimating: Revised cost of flight simulator facilities.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) Procurement		
Revised escalation indices. (Economic)	N/A	-52.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	-1272.7
Adjustment for current & prior inflation (Estimating)	+3.8	+15.2
Adjustment for Current & Prior Inflation (Support)	+0.3	+1.6
Total Variance associated with decrease of 677 aircraft. (From 1,147 to 470)	-1051.4	-5179.7
Allocation to Quantity Variance associated with the quantity change (From 1,147 to 470). (Quantity)	-487.8	-2397.7
Allocation to Engineering Variance associated with quantity change (From 1,147 to 470). (Engineering)	-7.0	-77.5
Allocation to Estimating Variance associated with quantity change (From 1,147 to 470). (Estimating)	-556.6	-2704.5
Addition of Program Shutdown Costs (Estimating)	+2.5	+11.8
Reduced costs for airframe Multiyear Contract four and actual engine contract prices lower than projected. (Estimating)	-7.8	-31.3
Approximation of outyear requirements using Prior Cost Estimate Learning Curve. (Estimating)	-2.9	+72.7
Reduced estimates for Initial Spares. (Support)	-18.5	-90.2
Reduced estimates for Peculiar Support Equipment. (Support)	-2.4	-11.9

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UH-60A/L BLACK HAWK, December 31, 1994

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduced estimates for Other Weapon System (primarily Project Managers Office and associated Matrix support costs). (Support)	-21.3	-110.0
Reduced estimates for Data. (Support)	-3.5	-17.1
Reduced estimates for Trainers/Flight Simulators. (Support)	-14.0	-52.2
Procurement Subtotal	<u>-1115.2</u>	<u>-6716.4</u>

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.539	1.066	0.915	0.385	0.123	2.353	0.003	0.539	5.384	6.923

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

a. Procurement --		Initial Contract Price			
	<u>FY92-96 A/F MYC:Airframe:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
United Technologies Corp., Stratford, CT					
DAAJ09-92-C-A004, FFP		\$1539.4	N/A	300	
Award: April 28, 1992					
Definitized: April 28, 1992					
Current Contract Price		Estimated Price At Completion			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$1612.5	N/A	310	\$1612.5	\$1612.5

Explanation of Change:

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

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UH-60A/L BLACK HAWK, December 31, 1994

15. Contract Information (Cont'd):

		Initial Contract Price		
<u>FY94 SY w/options:Engine:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric, Lynn, MA				
DAAJ09-94-C-0044, FFP		\$115.4	N/A	188
Award: April 15, 1994				
Definitized: April 15, 1994				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$117.9	N/A	193	\$117.9	\$117.9

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: 81.8% (9 yrs/11 yrs)
- (2) Percent Program Cost Appropriated: 88.1% (\$2865.0 / \$3253.8)

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

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	2861.5	364.0	17.8	-	3243.3
MILCON	3.5	7.0	-	-	10.5
O&M	-	-	-	-	-
Total	2865.0	371.0	17.8	-	3253.8

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UH-60A/L BLACK HAWK, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 2031 Aircraft Procurement, Army

1987				2.4	7.3	7.2	7.2	0.2
1988				34.8	115.8	115.6	115.1	7.6
1989	23	2.2	39.9	91.6	336.8	336.5	334.4	10.8
1990	72	0.5	98.8	107.2	409.0	409.0	405.1	4.1
1991	48	3.8	68.5	40.7	160.7	160.1	137.4	4.3
1992	60	1.6	96.9	124.0	502.4	502.4	463.3	3.0
1993	52	1.6	71.4	85.0	353.2	346.9	228.2	2.7
1994	63	0.1	93.1	101.8	434.9	419.9	124.5	2.0
1995	60	2.0	90.9	74.9	329.4	184.2	0.9	2.7
1996	60		91.5	80.3	364.0			3.0
1997		2.5		3.8	17.8			3.0
Subtot	438	14.3	651.0	746.5	3031.3	2481.8	1816.1	

Recurring flyaway cost may exceed total base year dollars years when the advance procurement credits inherent in multiyear contracting are significantly greater than the advance procurement funding for future years.

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16c. 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: 2050 Military Construction, Army

1995				0.9	3.5			2.7
1996				1.8	7.0			3.0
Subtot				2.7	10.5			
Army	438	14.3	651.0	749.2	3041.8	2481.8	1816.1	

Appropriation: 0350 National Guard & Reserve Equipm, Defense

1991	24		39.6	39.6	156.0	156.0	135.4	4.3
1992								3.0
1993	8		13.5	13.5	56.0	56.0	52.8	2.7
Subtot	32		53.1	53.1	212.0	212.0	188.2	
DoD	32		53.1	53.1	212.0	212.0	188.2	
Grand Total	470	14.3	704.1	802.3	3253.8	2693.8	2004.3	

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RD&E

Procurement

To Date

0/0

320/318

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UH-60A/L BLACK HAWK, December 31, 1994

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

b. Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development	Current	Latest Approved
	<u>Estimate</u>	<u>Estimate</u>	<u>Threshold</u>
@ Qty 1107 - @ Peak Rate: 17.0/mo			
FY 72 Base-Year \$	0.951	1.526	0.000
Then Year \$	1.089	6.025	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

An airframe DTC goal of \$600K (FY72C\$) was established at Milestone II for the UH-60. A system DTC goal of \$951K (FY72C\$) was established between Milestone II and Milestone III. In neither case, however, were thresholds established. A type classification IPR for the UH-60L was held in September, 1989 without the establishment of a DTC goal or threshold.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

UH-60L 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 application 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.

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UH-60A/L BLACK HAWK, December 31, 1994

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

Source of the estimate is a 1987 study.

b. Costs -- (FY 1971 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per 1,000 Flying Hours UH-60L BLACK HAWK	Avg Annual Cost Per 1,000 Flying Hours UH-1 Iroquois
Personnel	463.5	355.7
Consumption	240.6	130.2
Depot Maintenance	24.9	135.5
Modifications--Material	25.2	19.4
Other Direct Cost	80.1	0.0
Other Indirect Cost	95.7	153.9
Total	930.0	794.7

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Int. Contractor Supp	---	---	---	---	---
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.

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UH-60A/L BLACK HAWK, December 31, 1994

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 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.

Costs shown are for both the UH-60A and the UH-60L.

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CVN-68 Class, December 31, 1994

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 20 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 will 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 six 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), USS ABRAHAM LINCOLN (CVN 72), and USS GEORGE WASHINGTON (CVN 73) were delivered in 1975, 1977, 1982, 1986, 1989, and 1992 respectively. There are three ships currently under construction at Newport News Shipbuilding; the JOHN C. STENNIS (CVN 74), the HARRY S. TRUMAN (CVN 75) and the RONALD W. REAGAN (CVN-76). The CVN 74 construction began in November 1988 and was launched and christened on 11 November 1993. Target delivery date is November 1995 and contract delivery date is June 1996. CVN 75 construction began in April 1989 and the keel was laid on 29 November 1993. Contract delivery date is June 1998. CVN 76 is scheduled for delivery in December 2002.

b. (U) Significant Developments Since Last Report --

CVN-76 full funding was appropriated in FY 1995 and ship construction contract was awarded on 8 December 1994. The funding request for follow on carriers beyond CVN 76 will be based on the results of an ongoing study of alternative carrier concepts and subsequent program decisions.

c. (U) Changes Since As Of Date --

There have been no changes since the "as of" date.

8. (U) Threshold Breaches:

The CVN 77 Acquisition Program Baseline (APB) Schedule dated June 25, 1993 has been breached due to the ship being fully funded in FY 2002 vice FY 2001. A Program Deviation Report is being submitted. There are no Nunn-McCurdy unit cost breaches.

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CVN-68 Class, December 31, 1994

8. (U) Threshold Breaches (Cont'd):

cost breaches.

9. (U) Schedule:
CVN-74/75

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
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. The CVN 74 launch date was changed from December 1993 to November 1993 to make it concurrent with the CVN 75 keel laying where the shipbuilder laid the keel of CVN 75 in the same drydock after the CVN 74 was launched.

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

d. (U) References --

(U) Production Estimate:
FY 1988 President's Budget

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

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CVN-68 Class, December 31, 1994

9d. (U) Schedule (Cont'd):
CVN-76

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
CVN-76			
Contract Award	JUN 95	JUN 95	DEC 94
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 --

Revised the date for ship award from June 1995 to December 1994.

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

d. (U) References --

(U) Production Estimate:

The FY 1992 President's Budget.

(U) Approved Program:

NAB Approved Acquisition Program Baseline dated October 02, 1992.

CVN-77

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
CVN 77			
Definitization of Contracts	DEC 00	JUN 01	DEC 01(Ch-1)
Start Production	NOV 01	NOV 01	NOV 02(Ch-1)
Lay Keel	DEC 03	DEC 03	DEC 04(Ch-1)
Launch	DEC 06	DEC 06	DEC 07(Ch-1)
Delivery	DEC 08	DEC 08	DEC 09(Ch-1)

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

c. (U) Current Change Explanations --

Ch-1 The full funding for CVN-77 has been moved to FY 2002 vice FY 2001.

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CVN-68 Class, December 31, 1994

9d. (U) Schedule (Cont'd):
CVN-77

d. (U) References --

(U) Production Estimate:
FY 1994 President's Budget dated April 08, 1993.

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

10. (U) Performance Characteristics:
CVN-74/75

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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
Propulsion	NUCLEAR	NUCLEAR / NUCLEAR	1/ NUCLEAR	NUCLEAR

(b)(1)

Stores (days)	75	75 / 75	75	75
Close In Weapon Systems	4	4 / 4	4	4
NATO Sea Sparrow Missile Systems	3	3 / 3	3	3
Aviation Strike	2400	2400 / 2400	2451	2451

(b)(1)

Operational Number of Aircraft (deck multiple in A4 Equivalents)	151	151 / 151	151 3/4	151
Core Life (yrs)	13	N/A / N/A	-- 2/	20 (Ch-1)
Number of Reactors	2	N/A / N/A	2	2
Crew (Including Air Wing)	6280	N/A / N/A	6040	6048

1/ Actual based on CVN 68 Class standardization trials.
2/ Requires extensive operational data and is dependent on actual
core life. The USS NIMITZ, the first CVN 68 class ship, was delivered

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CVN-68 Class, December 31, 1994

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

CVN-74/75

in 1975 and will not be refueled until 1998.

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 Versatile 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 --

Ch-1 Based on demonstrated performance on CVN-68 the core life has been increased from 15 years to 20 years.

d. (U) References --

(U) Production Estimate:

FY 1988 President's Budget

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-76

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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 1/	97337

(b)(1)

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CVN-68 Class, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):
CVN-76

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Stores (days)	75	75	/ 75	75	75	
Close In Weapon Systems	4	4	/ 4	4	4	
NATO Sea Sparrow Missile Systems	3	3	/ 3	3	3	
Aviation Strike Ordnance (long tons)	2400	2400	/ 2400	2451	2451	
(b)(1) [REDACTED]						
Operational Number of Aircraft (deck multiple in A4 Equivalents)	151	151	/ 151	151 3/4	151	
Core Life (yrs)	13	N/A	/ N/A	-- 2/	20	(Ch-1)
Number of Reactors	2	N/A	/ N/A	2	2	
Crew (Including Air Wing)	6280	N/A	/ N/A	6040	6048	

1/ Actual based on CVN 68 Class standardization trials.

2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.

3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156. The CVN 76 will be a modified repeat of the CVN 74/75. RDT&E funding became available in FY 1991 to begin contract design for CVN 76 which continues through to FY 95.

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 Versatile 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 --

Ch-1 Based on demonstrated performance on CVN-68 the core life has been increased from 15 years to 20 years.

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CVN-68 Class, December 31, 1994

10d. (U) Performance Characteristics (Cont'd):
CVN-76

d. (U) References --

(U) Production Estimate:
The FY 1992 President's Budget.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-77

a. (U) Performance --

	<u>PdE</u>	<u>Approved Program</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
		<u>Objective/Threshold</u>			

Length Overall	1092	1092	/ 1092	1092	1092
Beam	134	134	/ 134	134	134
Maximum Width	252	252	/ 252	252	252
Draft (Combat Load) (ft)	40.4	39.0	/ 40.4	40.4	40.4
Displacement (tons)	97337	99000	/ 102500	102500	97337
Propulsion	Nuclear	Nuclear	/ Nuclear	1/ Nuclear	Nuclear

(b)(1)

Store (days)	75	75	/ 75	75	75
Close in Weapons Systems	4	4	/ 4	4	4
NATO Sea Sparrow Missile Systems	3	3	/ 3	3	3
Aviation Strikes	2451	2400	/ 2400	2451	2451
Ordinance (Long Tons)					

(b)(1)

Operational Number of Aircraft (Deck Multiple in A4 Equivalents)	151	151	/ 151	151 3/	151
Core Life (yrs)	15	N/A	/ N/A	-- 2/	20 (Ch-1)
Number of Reactors	2	N/A	/ N/A	2	2
Crew (Including Air Wing)	6048	N/A	/ N/A	6040	6048

1/ Actual based on CVN 68 Class standardization trials.

2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.

3/ The operational number of aircraft (deck multiple) in A7

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CVN-68 Class, December 31, 1994

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

CVN-77

equivalents is 156.

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

c. (U) Current Change Explanations --

Ch-1 Based on demonstrated performance on CVN-68 the core life has been increased from 15 years to 20 years.

d. (U) References --

(U) Production Estimate:

FY 1994 President's Budget dated April 08, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 25, 1993.

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

CVN-74/75

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	5911.0	6528.4	6530.6
Basic	(3744.9)		(4163.9)
Government Furnished Equipment	(1998.1)		(2221.6)
Other Costs	(28.1)		(31.4)
OF/PD	(139.9)		(113.7)
Total Sailaway	(5911.0)		(6530.6)
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	5911.0	6528.4	6530.6
Escalation	1055.0	576.9	512.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(1055.0)	(576.9)	(512.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6966.0	7105.3	7043.0

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CVN-68 Class, December 31, 1994

11b. (U) Total Program Cost and Quantity (Cont'd):
CVN-74/75

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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

e. (U) References --

(U) Production Estimate:
FY 1988 President's Budget

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-76

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	48.1	48.1	38.4
Procurement	3862.7	4488.6	4109.1
Basic	(2458.7)		(2616.8)
Government Furnished Equipment	(1311.7)		(1396.1)
Other	(18.6)		(19.8)
OF/PD	(73.7)		(76.4)
Total Sailaway	(3862.7)		(4109.1)
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	0.0	0.0
Total FY 95 Base-Year \$	3910.8	4536.7	4147.5
Escalation	386.4	433.2	289.3
Development (RDT&E)	(-1.1)	(-1.1)	(-1.1)
Procurement	(387.5)	(434.3)	(290.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	4297.2	4969.9	4436.8

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CVN-68 Class, December 31, 1994

11b. (U) Total Program Cost and Quantity (Cont'd):
CVN-76

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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 -- \$829.4M

e. (U) References --

(U) Production Estimate:
The FY 1992 President's Budget.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-77

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	0.0	0.0	42.6
Procurement	4557.1	4719.2	4747.8
Basic	(2901.1)		(3031.5)
Government Furnished Equipment	(1547.8)		(1617.4)
Other Costs	(21.9)		(22.9)
OP/PD	(86.3)		(76.0)
Total Sailaway	(4557.1)		(4747.8)
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	0.0	0.0
Total FY 95 Base-Year \$	4557.1	4719.2	4790.4
Escalation	983.7	1019.7	1538.1
Development (RDT&E)	(0.0)	(0.0)	(7.7)
Procurement	(983.7)	(1019.7)	(1530.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	5540.8	5738.9	6328.5

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CVN-68 Class, December 31, 1994

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

CVN-77

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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 -- \$1275.0M

e. (U) References --

(U) Production Estimate:

FY 1994 President's Budget dated April 08, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 25, 1993.

12. (U) Unit Cost Summary:

CVN-74/75

	<u>Current Estimate (DEC 94 SAR)</u>	<u>UCR Baseline (OCT 92 APB)</u>	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	6530.6	6528.4	
(2) Quantity	2	2	
(3) Unit Cost	3265.30	3264.20	0.03
b. (U) Procurement			
(1) Cost (BY88\$)	6530.6	6528.4	
(2) Quantity	2	2	
(3) Unit Cost	3265.30	3264.20	0.03

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CVN-68 Class, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

CVN-76

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 92 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY95\$)	4147.5	4536.7	
(2) Quantity	1	1	
(3) Unit Cost	4147.50	4536.70	-8.58
b. (U) Procurement			
(1) Cost (BY95\$)	4109.1	4488.6	
(2) Quantity	1	1	
(3) Unit Cost	4109.10	4488.60	-8.45

CVN-77

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY95\$)	4790.4	4719.2	
(2) Quantity	1	1	
(3) Unit Cost	4790.40	4719.20	1.51
b. (U) Procurement			
(1) Cost (BY95\$)	4747.8	4719.2	
(2) Quantity	1	1	
(3) Unit Cost	4747.80	4719.20	0.61

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CVN-68 Class, December 31, 1994

13. (U) Cost Variance Analysis:
CVN-74/75

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	0.0	6966.0	0.0	6966.0
Previous Changes:				
Economic	-	-110.0	-	-110.0
Quantity	-	-	-	-
Schedule	-	-644.4	-	-644.4
Engineering	-	-	-	-
Estimating	-	+724.8	-	+724.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-29.6	-	-29.6
Current Changes:				
Economic	-	10.7	-	+10.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	95.9	-	+95.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+106.6	-	+106.6
Total Changes	-	+77.0	-	+77.0
Current Estimate	-	7043.0	-	7043.0

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CVN-68 Class, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
CVN-74/75

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	0.0	5911.0	0.0	5911.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-124.1	-	-124.1
Engineering	-	-	-	-
Estimating	-	+654.8	-	+654.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+530.7	-	+530.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	88.9	-	+88.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+88.9	-	+88.9
Total Changes	-	+619.6	-	+619.6
Current Estimate	-	6530.6	-	6530.6

b. (U) Previous Change Explanations --

Procurement

Economic: Revised economic rates.

Schedule: Funding of two ships 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.
Revised shipbuilding contract cost. Increase for change orders. Reclassification of outfitting and post delivery to Sailaway cost. Offset for reclassification of outfitting and post delivery.

Support: Revised estimates for Post Delivery and Outfitting.

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CVN-68 Class, December 31, 1994

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

CVN-74/75

Reclassify outfitting and post delivery from
Support to Sailaway.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+10.7
Adjustment for Current & Prior Inflation. (Estimating)	-10.3	-11.3
Increased shipbuilding contract escalation. (Estimating)	+97.2	+104.0
Revised outfitting and post delivery costs (Estimating)	+2.0	+3.2
Procurement Subtotal	+88.9	+106.6

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CVN-68 Class, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
CVN-76

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	47.0	4250.2	0.0	4297.2
Previous Changes:				
Economic	+0.5	-23.9	-	-23.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.9	+346.8	-	+336.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.4	+322.9	-	+313.5
Current Changes:				
Economic	-	-79.0	-	-79.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.3	-94.6	-	-94.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.3	-173.6	-	-173.9
Total Changes	-9.7	+149.3	-	+139.6
Current Estimate	37.3	4399.5	-	4436.8

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CVN-68 Class, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
CVN-76

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	48.1	3852.7	0.0	3910.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.4	+367.5	-	+358.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.4	+367.5	-	+358.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.3	-121.1	-	-121.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.3	-121.1	-	-121.4
Total Changes	-9.7	+246.4	-	+236.7
Current Estimate	38.4	4109.1	-	4147.5

b. (U) Previous Change Explanations --

RD&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. Adjustment for current and prior inflation. Increase cost for ship

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CVN-68 Class, December 31, 1994

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

CVN-76

construction due to single ship buy, declining vendor base, and increase engineering effort. Congressional reduction for inflation assumptions and consultant services. Reclassification of outfitting and post delivery to Sailaway costs. Offset for reclassification of outfitting and post delivery.

Support: Revised estimates for outfitting and post delivery. Reclassify outfitting and post delivery from Support to Sailaway.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised program estimate. (Estimating)	-0.3	-0.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-79.0
Adjustment for Current & Prior Inflation. (Estimating)	+53.5	+56.7
Funding profile changed. \$1.2 billion funded in FY 1995 vice FY 1994. (Estimating)	-33.2	--
Congressional reductions in propulsion plant and procurement reform. (Estimating)	-165.2	-178.1
Revised outfitting and post delivery funding. (Estimating)	+4.1	+6.0
Revised estimate to offset increase in inflation indices. (Estimating)	+19.7	+20.8
Procurement Subtotal	-121.1	-173.6

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CVN-68 Class, December 31, 1994

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	-	+394.9	-	+394.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+204.2	-	+204.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+599.1	-	+599.1
Current Changes:				
Economic	-	-108.1	-	-108.1
Quantity	-	-	-	-
Schedule	-	235.3	-	+235.3
Engineering	-	-	-	-
Estimating	50.3	11.1	-	+61.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+50.3	+138.3	-	+188.6
Total Changes	+50.3	+737.4	-	+787.7
Current Estimate	50.3	6278.2	-	6328.5

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CVN-68 Class, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
CVN-77

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDTE&	PROC	MILCON	TOTAL
Production Estimate	0.0	4557.1	0.0	4557.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+114.9	-	+114.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+114.9	-	+114.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	68.3	-	+68.3
Engineering	-	-	-	-
Estimating	42.6	7.5	-	+50.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+42.6	+75.8	-	+118.4
Total Changes	+42.6	+190.7	-	+233.3
Current Estimate	42.6	4747.8	-	4790.4

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

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDTE&

Addition of RDTE& costs to the CVN 77
program estimate. (Estimating)

+42.6 +50.3

(2) Procurement

Revised escalation indices. (Economic)

N/A -108.1

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CVN-68 Class, December 31, 1994

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

CVN-77

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Changed procurement buy to FY 2002 vice FY 2001. (Schedule)	+68.3	+235.3
Revised outfitting and post delivery (Estimating)	+7.5	+11.1
Procurement Subtotal	+75.8	+138.3

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

CVN-74/75

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3483.0	-49.7	--	-322.2	--	410.4	--	--	38.5	3521.5

CVN-76

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4297.2	-102.4	--	--	--	242.0	--	--	139.6	4436.8

CVN-77

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5540.80	286.80	--	235.30	--	265.60	--	--	787.70	6328.50

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CVN-68 Class, December 31, 1994

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

The contract amounts include funding for CVN 74/75 and CVN 76.

a.(U) Procurement --			Initial Contract Price	
(U) <u>Nuclear Components:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
DEPARTMENT OF ENERGY, WASHINGTON, DC				
N00024-67-F-5110, FFP/CPFF	\$815.2	\$0.0	0	
Award: February 1, 1988				
Definitized: February 1, 1988				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$815.2	\$0.0	0	\$815.2	\$815.2

Explanation of Change:

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

The contract amounts include funding for CVN 74/75 and CVN 76. Cost performance reporting is not required on this FFP contract.

(U) <u>CVN-74/75 Construction:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Tenneco, Newport News, VA				
N00024-88-C-2055, FPIF	\$3674.0	\$4318.6	2	
Award: June 30, 1988				
Definitized: June 30, 1988				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$3773.4	\$4432.7	2	\$3906.8	\$4022.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-128.5	\$-168.9
Cumulative Variances To Date (09/30/94)	<u>\$-125.6</u>	<u>\$-57.7</u>
Net Change	\$2.9	\$111.2

Explanation of Change:

The improvement in the negative cost variance is largely due to favorable labor performance over the past year. The labor progress has improved as NNS is using an improved build strategy resulting in a reduction in manhours. Also, NNS continues to control overhead by reducing manning, health care costs, indirect employees and the number of high overhead departments.

The improvement in the negative schedule variance is due to NNS

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CVN-68 Class, December 31, 1994

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

correcting the schedule to more accurately reflect their true build plan. NNS revised the delivery date for CVN 74 to 11 Nov 1995 and incorporated the respective build strategy revisions into the Performance Measurement Baseline. Also, NNS corrected the BCWS variance distortion within miscellaneous Direct Procurement by replacing the initial baseline curve with one that is more representative of the historical trends associated with that material. Specifically, the original schedule required Construction Spares and Onboard Repair Parts to be in yard early, however, the components were not required until late in the construction plan.

(U) <u>Nuclear Components:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Westinghouse Electric Co., Monroeville, Pa					
N00024-88-C-4007, FFP/CPFF			\$814.0	N/A	0
Award: February 1, 1988					
Definitized: February 1, 1988					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$814.0	N/A	0	\$814.0	\$814.0	

Explanation of Change:

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

The contract amounts include funding for CVN 74/75 and CVN 76.

(U) <u>Nuclear Components:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Westinghouse Electric Co., Schenectady, NY					
N00024-88-C-4008, FFP/CPFF			\$354.6	N/A	0
Award: February 28, 1988					
Definitized: February 28, 1988					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$354.6	N/A	0	\$354.6	\$354.6	

Explanation of Change:

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

The contract amounts include funding for CVN 74/75 and CVN 76.

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CVN-68 Class, December 31, 1994

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

(U) <u>CVN-76 Construction:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Newport News Shipbuilding, Newport News, VA			
N00024-95-C-2106, FPIF	\$2517.3	\$2884.0	1
Award: December 8, 1994			
Definitized: December 8, 1994			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2517.3	\$2884.0	1	\$2517.3	\$2517.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	\$0.0	\$0.0

Explanation of Change:

Newport News Shipbuilding has not submitted the first cost performance report.

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 36.4% (8 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 63.3% (\$11278.4 / \$17808.3)

CVN-74/75

- (1) Percent Program Completed: 66.7% (8 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 98.6% (\$6942.8 / \$7043.0)

CVN-76

- (1) Percent Program Completed: 38.5% (5 yrs/13 yrs)
- (2) Percent Program Cost Appropriated: 97.7% (\$4335.6 / \$4436.8)

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CVN-68 Class, December 31, 1994

CVN-77

(1) Percent Program Completed: 0.0% (0 yrs/12 yrs)

(2) Percent Program Cost Appropriated: 0.0% (\$0.0 / \$6328.5)

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

Total Program					
<u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY88-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2009)	<u>Total</u>
RDT&E	37.3	-	-	50.3	87.6
Procurement	11241.1	16.6	35.5	6427.5	17720.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	11272.4	16.6	35.5	6477.8	17808.3

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

CVN-74/75

<u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY88-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-99)	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	6942.8	16.6	35.5	48.1	7043.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6942.8	16.6	35.5	48.1	7043.0

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CVN-68 Class, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):
CVN-76

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

CVN-76

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2003)</u>	<u>Total</u>
RDT&E	37.3	-	-	-	37.3
Procurement	4298.3	-	-	101.2	4399.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4335.6	-	-	101.2	4436.8

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

CVN-77

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2009)</u>	<u>Total</u>
RDT&E	-	-	-	50.3	50.3
Procurement	-	-	-	6278.2	6278.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	-	-	6328.5	6328.5

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CVN-68 Class, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
CVN-74/75

c. (U) Annual Summary -- CVN-74/75

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1988	2		6530.6	6282.3	6728.3	6417.3	4663.0	2.6
1992				139.5	168.0	168.0	16.3	2.5
1993				6.1	7.5	7.5	3.8	3.2
1994				10.7	13.4	11.4	6.1	4.1
1995				19.8	25.6			2.7
1996				12.5	16.6			3.0
1997				25.9	35.5			3.0
1998				26.3	37.2			3.0
1999				7.5	10.9			3.0
Subtot	2		6530.6	6530.6	7043.0	6604.2	4689.2	
Grand Total	2		6530.6	6530.6	7043.0	6604.2	4689.2	

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CVN-68 Class, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
CVN-76

c. (U) Annual Summary -- CVN-76

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1991				2.0	1.8	1.8	1.5	4.3
1992				8.7	8.2	8.2	7.8	2.8
1993				12.4	12.0	12.0	10.5	2.7
1994				10.6	10.5	10.5	6.4	2.0
1995				4.7	4.8	2.3		2.7
Subtot				38.4	37.3	34.8	26.2	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1993				815.8	829.4	829.4	39.2	3.2
1994								4.1
1995	1		4109.1	3217.0	3468.9	2967.3		2.7
1999								3.0
2000				11.2	14.0			3.0
2001				11.0	14.2			3.0
2002				22.6	30.0			3.0
2003				31.5	43.0			3.0
Subtot	1		4109.1	4109.1	4399.5	3796.7	39.2	

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CVN-68 Class, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
CVN-76

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

Grand Total	1		4109.1	4147.5	4436.8	3831.5	65.4	
----------------	---	--	--------	--------	--------	--------	------	--

c. (U) Annual Summary -- CVN-77

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1998				2.9	3.2			3.0
1999				11.7	13.4			3.0
2000				12.4	14.7			3.0
2001				15.6	19.0			3.0
Subtot				42.6	50.3			

Appropriation: 1611 Shipbuilding and Conversion, Navy

2000				377.1	471.4			3.0
2001				122.2	157.3			3.0
2002	1		4747.8	4172.5	5533.6			3.0

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CVN-68 Class, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
CVN-77

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (%)
		Non-rec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

2004				1.8	2.4			3.0
2005				9.8	13.8			3.0
2006				5.9	8.6			3.0
2007				10.6	15.8			3.0
2008				12.8	19.7			3.0
2009				35.1	55.6			3.0
Subtot	1		4747.8	4747.8	6278.2			
Grand Total	1		4747.8	4790.4	6328.5			

17. (U) Production Rate Data:

CVN-74/75

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

CVN-76

- a. (U) Deliveries Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

CVN-77

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

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CVN-68 Class, December 31, 1994

17b. (U) Production Rate Data (Cont'd):
CVN-77

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

18. (U) Operating and Support Costs:
CVN-74/75

a. (U) Assumptions and Ground Rules --

These costs are based on the operating costs for supplies, equipage, and pier-side 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

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.

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14-011

SELECTED ACQUISITION REPORT (RCS:DP-COMP (Q&A) 823)

PROGRAM: NAVSTAR GPS

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
NAVSTAR GPS/NAVSTAR Global Positioning System

2. (U) DoD Component: USAF

Joint Participants:

United States Army (USA), United States Navy (USN), United States Marine Corps (USMC)

3. (U) Responsible Office and Telephone Number:

NAVSTAR GPS Joint Program Office	COL MICHAEL P. WIEDEMER
Space and Missile Systems Center	Assigned: July 23, 1993
2435 Vela Way, Suite 1613	AV 833-1526 COMM (310) 363-1526
Los Angeles AFB, CA 90245-5500	

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

RDT&E:

PE 0206626M, 0305164A, 0305164F, 0305164M, 0305164N, 0305165F, 0603421F
PE 0604478F, 0604480F, 0604777N, 0604778A, 0604778F

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DIRECTORATE FOR FREEDOM INFORMATION
AND SECURITY REVIEW (DFSI)
DEPARTMENT OF DEFENSE

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NAVSTAR GPS, December 31, 1994

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

PROCUREMENT:

APPN 1109 ICN N/A (Navy)
APPN 1506 ICN OSIP 17-88 (Navy)
APPN 1611 ICN N/A (Navy)
APPN 1810 ICN BLI265700 (Navy)
APPN 2031 ICN K47800 (Army)
APPN 2035 ICN K47800 (Army)
APPN 3010 ICN MGPS00 (Air Force)
APPN 3020 ICN MGPS00 (Air Force)
APPN 3080 ICN MGPS00 (Air Force)

MILCON:

PE 0305165F

O & M:

PE 0305164N, 0305164F

Note: Item Control Numbers (ICN) are unique to the Air Force. The Navy equivalent is Budget Line Item (BLI) and the Army is Standard Study Number (SSN).

5. (U) Related Programs:

Nuclear Detonation (NUDET) Detection System (NDS); Space Boosters Program (Delta II); Medium Launch Vehicle III (MLVIII); Evolved Expendable Launch Vehicle (EELV); and Combat Survivor/Evader Locator (CSEL).

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 positioning, velocity, navigation, and time reference capability to multiple users worldwide. 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/sea warfare. GPS carries a suite of nuclear detonation detection system sensors as a secondary payload. These sensors provide worldwide, near realtime, 3-dimensional location of nuclear detonations. NAVSTAR GPS does not replace any United States Air Force weapon system; however, it provides the capability to replace the following support systems: Very High Frequency (VHF) Omnidirectional Range (VOR), Long Range Aid to Navigation (LORAN), OMEGA, Tactical Air Navigation (TACAN), and Distance Measurement Equipment (DME).

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NAVSTAR GPS, December 31, 1994

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Full scale development of the Global Positioning System (GPS) began in June 1979, with approval of Milestone II. Between this date and October 1985, the Joint Program Office (JPO) launched 10 Block I development satellites and developed the associated ground control system software to support system testing. In May 1983, the JPO awarded a firm-fixed-price, multiyear contract for 28 Block II satellites, and they completed qualification testing in May 1986. The JPO successfully launched the first production satellite in February 1989, and they have since completed an additional 23 successful launches. In June 1989, the Department of Defense (DoD) added 20 replenishment satellites (Block IIR) to the approved program. The JPO completed development of Block IIR in December 1992, and first delivery is expected in April 1996. Initial operational capability (IOC) was declared on 8 December 1993 in a joint announcement by the DoD and Department of Transportation (DoT).

Air Force Space Command (AFSPC) assumed management responsibility for the ground control segment in April 1990. This segment consists of ground antennas, monitor stations, and a master control station necessary to control GPS satellites. The JPO delivered the final release of operational control software for the current production satellite (Block IIA) to the AFSPC in May 1993.

GPS user equipment development began in June 1979 with receiver testing (using Block I satellites) in a variety of land, sea, and air vehicles. Following a competitive source selection, the JPO awarded the first major user equipment contract in April 1985. This contract included research and development as well as production options for 1-, 2-, and 5-channel GPS airborne, shipboard, and manpack (portable) receivers. The JPO received approval for low rate initial production for user equipment in June 1986, and it subsequently awarded the first production option in August 1986. In October 1987, the JPO awarded two second-source contracts for 2- and 5-channel airborne and shipboard receivers. In September 1990, the JPO awarded five production contracts for standard GPS user equipment. Since then, they have awarded additional contracts for the Miniaturized Airborne GPS Receiver (MAGR), the Small Lightweight GPS Receiver (SLGR), the Timing GPS Receiver (TGR), and the Precision Lightweight GPS Receiver (PLGR). The TGR and PLGR were nondevelopmental items (NDI). GPS user equipment successfully completed the Defense Acquisition Board (DAB) Milestone IIIB in January 1992 and achieved depot initial operational capability in March 1993.

To expedite GPS platform installations, Congress mandated, in November 1993, that all military vehicles must have GPS hardware installed by 30 September 2000. The Air Force implemented and funded Project 2000 to meet this requirement.

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NAVSTAR GPS, December 31, 1994

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

In October 1992, the NAVSTAR GPS program transferred from a Program Executive Officer for Space to a Designated Acquisition Commander Program. In addition, the Defense Acquisition Executive redesignated GPS from an Acquisition Category 1D to a 1C program.

b. (U) Significant Developments Since Last Report --
With the launch of Mission II-24, on March 9, 1994, the Global Positioning System (GPS) constellation consists of one operational Block I and 24 Block II/IIA satellites. The Air Force has launched and now must maintain a complete constellation of 24 Block II/IIA satellites. We have four Block IIA satellites in ground storage awaiting a launch call. The next satellite will not be launched until a pending or actual on-orbit failure occurs and a launch call is issued by Air Force Space Command (AFSPC).

On 15 September 1994, the Joint Program Office (JPO) received approval for its revised Acquisition Program Baseline (APB). This baseline sustains the GPS satellite constellation through fiscal year (FY) 2016. The JPO's APB includes costs associated with 12 Research, Development, Test, and Evaluation (RDT&E) satellites and 106 production satellites: 28 Block II/IIA, 21 Block IIR, 51 Block IIF as replacements for the Block IIR at the end of their useful life (6 short-term and 45 long-term sustainment satellites), and 6 follow-on satellites (as eventual replacements for the Block IIF as identified in the APB).

The new APB eliminated the total procurement cost breach to the old APB (21 October 1993) reported in the 1993 Selected Acquisition Report (SAR). That breach occurred when the FY95 President's Budget (PB) funded approximately \$500M for procurement of eight "gap-filler" satellites. The "gap-filler" requirement was later reduced to six satellites and incorporated into the Block IIF acquisition strategy as Block IIF short-term sustainment satellites.

The NAVSTAR GPS program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --
In January 1995, the Joint Program Office (JPO) announced slips to three Block IIR milestones as a result of Martin Marietta's declaration that the milestones could not be met due to various problems experienced during manufacturing start-up. First and second contract deliveries slipped from November 1995 and February 1996 to April 1996 and June 1996, respectively. First launch availability slipped from March 1996 to August 1996. Although the slip puts these milestones close to their thresholds, no breaches are expected. The

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NAVSTAR GPS, December 31, 1994

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

new schedule decompresses satellite integration and test activities and adds prudent schedule margin.

In January 1995, the Air Force convened an Acquisition Strategy Panel (ASP) to determine the strategy for the sustainment of the satellite constellation. The ASP approved the JPO's plan for the Block IIF short-term and long-term sustainment satellites. The final acquisition strategy for the sustainment satellites is still in discussion within the Air Force; however, resolution is expected during the third quarter of fiscal year (FY) 95.

In January 1995, the JPO released the Operational Control Segment (OCS) request for proposal. This contract covers all support efforts needed to sustain the OCS. Contract award will occur in July 1995, with expected period of performance to continue to July 2000.

8. (U) Threshold Breaches:

There are no breaches to the Air Force Acquisition Executive (AFAE) approved Acquisition Program Baseline (APB) dated September 15, 1994, and no Munn-McCurdy unit cost breaches.

9. (U) Schedule:

NAVSTAR GPS Satellite

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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 AFSPACCOM	N/A	APR 90	APR 90
Last Block IIA Satellite Delivery	N/A	NOV 92	MAY 93
21 Satellites on-orbit	N/A	MAR 93	JUN 93
First Block IIR Contract Delivery	N/A	NOV 95	APR 96 (Ch-1)
Second Block IIR Contract Delivery	N/A	FEB 96	JUN 96 (Ch-1)
Availability of First Block IIR Satellite for Launch	N/A	MAR 96	AUG 96 (Ch-1)

b. (U) Previous Change Explanations --

Launch of the first Block II production satellite slipped from January 1987 to January 1989 due to the shuttle stand down. Subsequently, the Air Staff revised the program management directive to incorporate the stand down. An additional delay in the Delta II initial launch capability resulted in the slip in first production satellite launch date from January 1989 to February 1989. Air Force

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

NAVSTAR GPS Satellite

Space Command (AFSPC) accepted turnover of the Global Positioning System (GPS) satellite control segment in April 1990. Twenty-one satellites on orbit moved from March 1993 to June 1993. The final Block IIA satellite delivery changed from November 1992 to May 1993.

c. (U) Current Change Explanations --

(Ch-1) In January 1995, three Block IIR milestones were slipped due to technical problems and delivery delays. First and second Block IIR contract deliveries slipped from November 1995 and February 1996 to April 1996 and June 1996, respectively. Availability of first Block IIR satellite for launch slipped from March 1996 to August 1996.

d. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated September 15, 1994.

NAVSTAR GPS User Equip

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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 IILA (JRMBS) 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
First Full-Rate UE Production Delivery	N/A	NOV 93	NOV 93
Full Depot Capability	N/A	JUN 97	JUN 97

Full Depot Capability: Full Operational Capability (FOC) of initial standardized equipment depot capability occurred at Warner Robins Air Logistics Center in July 1994 and Tobyhanna Army Depot in September 1994. FOC for remaining User Equipment is expected in June 1997.

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NAVSTAR GPS, December 31, 1994

9b. (U) Schedule (Cont'd):
NAVSTAR GPS User Equip

b. (U) Previous Change Explanations --

Due to reliability and maintainability problems identified during user equipment testing, the program office conducted additional testing, causing the delay in completion of user equipment development testing. Delay of the first Block II satellite launch, late user equipment deliveries, and increased coordination required at the conclusion of testing caused the delay in Milestone IIIB from March 1989 to September 1990. In September 1990, the need to conduct additional testing to verify that all exit criteria were met, again delayed the Milestone IIIB decision. These delays caused the slip in the first full-rate user equipment production delivery date. The slip in the Milestone IIIB, from September 1991 to January 1992, again caused a slip in the first full-rate user equipment production deliveries from April 1993 to November 1993. Late delivery of an engineering change proposal for depot automatic test equipment caused the slip in depot capability from September 1992 to March 1993. The Joint Program Office added the full depot capability milestone in 1992.

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

d. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133 Revision B, February 1, 1980;
DCP on User Equipment, June 1986.

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated September 15, 1994.

10. (U) Performance Characteristics:
NAVSTAR GPS Satellite

a. (U) Performance --		Approved Program		Demon- strated	Current
	DE	Objective/Threshold		Perf	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

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NAVSTAR GPS, December 31, 1994

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

NAVSTAR GPS Satellite

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Block IIR SEP (m)	N/A	16	/ 16	TBD	16	
Block II Satellite	6	6	/ 6	3.35 /A	6.5	(Ch-1)
Mean Mission Duration (MMD) (yrs)						
System Availability % (minimum of 21 satellites are operational at any time)	98	98	/ 98	98.47 /B	98	
Satellite: (Block II)						
13-49 - Survivability						

(b)(1)

Satellite Maximum	N/A	4480	/ 4480	4480	4480
Weight (lbs) (Delta II)					
Expected Ground Power (End of Life) (dbw)					
L1 (C/A)	-160	-160	/ -160	-160	-160
L1 (Precision Code)	-163	-163	/ -163	-163	-163
L2 (Precision Code)	-166	-166	/ -166	-166	-166
Cesium Clock Stability (f/f)	2x10 ⁻¹³ -13	2x10 ⁻¹³	/ 2x10 ⁻¹³	1x10 ⁻¹³	1x10 ⁻¹³

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NAVSTAR GPS, December 31, 1994

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

NAVSTAR GPS Satellite

	DE	Approved Program <u>Objective/Threshold</u>		Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Time Transfer (Universal Coordinated Time) (nsec)	+/-100	+/- 100	/ +/- 100	+/-25	+/-100
Block II Satellite Design Life (yrs)	N/A	7.5	/ 7.5	3.35 /A	7.5
Block I Satellite Expected Ground Power (End of Life (dbw)					
L1 (C/A)	-160	N/A	/ N/A	-155	-160
L1 (Precision Code)	-163	N/A	/ N/A	-158	-163
L2 (Precision Code)	-166	N/A	/ N/A	-159	-166
Cesium Clock Stability f/f 2/	2x10 ⁻¹³ -13	N/A	/ N/A	2x10 ⁻¹³	2x10 ⁻¹³

(U) A/ Current demonstrated performance reflects Block II only.

(U) B/ Requirement is 98% probability of 21 satellites operational. Demonstrated performance is based upon actual availability of the satellites in the constellation.

(U) C/ Gamma dose rate parameters listed in the approved program column are derived from the approved system operation requirements documents and technical requirements documents.

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. Space based laser threat and X-Ray fluence were changed to correct a previous oversight. Cesium Clock Stability changed as a result of test data from the factory & the United States Navy Observatory.

c. (U) Current Change Explanations --

(U) (Ch-1) Reliability model projections incorporating actual on-orbit experience averaged over the constellation, as of January 23, 1995, changed the mean mission duration from 6.0 to 6.5 years.

(U) (Ch-2) Program Manager's Current Estimate changed from 3.5x10⁻⁹ to 4.5x10⁻⁹ to correct a previous error.

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NAVSTAR GPS, December 31, 1994

10d. (U) Performance Characteristics (Cont'd):
NAVSTAR GPS Satellite

d. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

(U) Approved Program:

APAS Approved Acquisition Program Baseline dated September 15, 1994.

NAVSTAR GPS User Equip

a. (U) Performance --		Approved Program		Demon- strated	Current
	<u>DE</u>	<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>
Reliability Mean Time Between Operational Mission Failures (hours)					
Airborne					
5-Channel	550	590	/ 500	2130.2	2130.2
2-Channel	550	929	/ 500	722.8	722.8
Ground (hrs)	850	2000	/ 500	1653.2	1653.2
Sea (hrs)	900	680	/ 680	2880.8	2880.8
Maintainability Mean Time to Repair (hours)					
Airborne					
5-Channel	1.3	1	/ 1	.75	.75
2-Channel	1.3	.75	/ .75	.27	.27
Ground (hrs)	1.2	.75	/ .75	.18	.18
Sea (hrs)	1.3	1.5	/ 1.5	.77	.77

Note: The mean time to repair reflects intermediate-level repair of the sets, not operational-level.

b. (U) Previous Change Explanations --

The initial development estimate was established based on engineering estimates and limited test data from initial prototype user equipment. Reliability and Maintainability objectives and thresholds were updated at Milestone IIIB to represent improvements in equipment technology. Due to large variation in performance between 2- and 5-channel receivers, we separated reliability and maintainability parameters for each receiver type. Changes were made to reflect results of latest Global Positioning System receiver operational testing.

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NAVSTAR GPS, December 31, 1994

10c. (U) Performance Characteristics (Cont'd):
NAVSTAR GPS User Equip

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

d. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133 Revision B, February 1, 1980;
DCP on User Equipment, June 1986.

(U) Approved Program:

APAE Approved Acquisition Program Baseline dated September 15, 1994.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	967.6	1563.3	1532.2
Procurement	623.4	3026.9	2930.3
Flyaway	(583.6)		(2449.1)
Other Weapon Systems	(39.8)		(481.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	8.4	4.7	4.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 79 Base-Year \$	1599.4	4594.9	4467.2
Escalation	707.3	6798.0	6695.9
Development (RDT&E)	(204.9)	(1389.2)	(1371.8)
Procurement	(496.1)	(5406.2)	(5321.5)
Construction (MILCON)	(6.3)	(2.6)	(2.6)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2306.7	11392.9	11163.1
b. (U) Quantity --			
Development (RDT&E)	12	12	12
Procurement	<u>28</u>	<u>106</u>	<u>106</u>
Total	40	118	118

Note: All Research Development Test and Evaluation (RDT&E) prototypes are considered fully configured.

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

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11d. (U) Total Program Cost and Quantity (Cont'd):
NAVSTAR GPS Satellite

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

(U) Approved Program:

AFAB Approved Acquisition Program Baseline dated September 15, 1994.

NAVSTAR GPS User Equip

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	941.8	1005.3	1082.4
Procurement	1613.1	2143.3	1758.7
Flyaway	(1115.9)		(1048.7)
Other Weapon Systems	(497.2)		(622.4)
Peculiar Support	(0.0)		(32.0)
Initial Spares	(0.0)		(55.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>40.0</u>
Total FY 79 Base-Year \$	2554.9	3148.6	2881.1
Escalation	2320.9	3492.9	3241.3
Development (RDT&E)	(441.9)	(593.7)	(694.8)
Procurement	(1879.0)	(2899.2)	(2504.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(42.4)</u>
Total Then-Year \$	4875.8	6641.5	6122.4
b. (U) Quantity --			
Development (RDT&E)	129	248	248
Procurement	<u>27210</u>	<u>119695</u>	<u>161050</u>
Total	27339	119943	161298

Note: The family of NAVSTAR Global Positioning System user equipment consists of over 25 different end items or line replaceable units (LRU's). These LRU's are grouped into six broad categories: receivers, antenna electronics, antennas, control display units, mounts, and support equipment. A user equipment set consists of one or more of these LRU's, depending upon the host vehicle. All Research Development Test and Evaluation units are considered fully configured end items.

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

NAVSTAR GPS User Equip

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

Country	Dollars	Quantities
		Receivers/Security Devices
Australia	\$.7M	38/1062
Belgium	\$.0M	0/112
Canada	\$ 1.2M	462/735
Denmark	\$.3M	0/892
Finland	\$ 2.2M	64/0
France	\$ 1.9M	0/5228
Germany	\$ 7.5M	100/1026
Greece	\$ 1.0M	40/0
Israel	\$ 1.5M	30/6307
Italy	\$.7M	0/1706
Japan	\$ 4.1M	62/342
Korea	\$ 3.2M	121/0
Netherlands	\$.3M	0/633
Norway	\$.1M	34/196
Spain	\$.3M	6/30
Turkey	\$.2M	11/500
United Kingdom	\$ 1.8M	0/4286
Mid-Life Update	\$ 7.6M	310/0

Notes: 1) Security devices refer to one of many types of auxiliary output chips or security modules. 2) The mid-life update is the program for F-16 sales to Belgium, Norway, Denmark, and the Netherlands. 3) Sales to Belgium have a dollar value which rounds to less than \$.1M.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133 Revision B, February 1, 1980;
DCP on User Equipment, June 86.

(U) Approved Program:

AFAP Approved Acquisition Program Baseline dated September 15, 1994.

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12. (U) Unit Cost Summary:

NAVSTAR GPS Satellite

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY79\$)	4467.2	4594.9	
(2) Quantity	118	118	
(3) Unit Cost	37.858	38.940	-2.779
b. (U) Procurement			
(1) Cost (BY79\$)	2930.3	3026.9	
(2) Quantity	106	106	
(3) Unit Cost	27.644	28.556	-3.191

NAVSTAR GPS User Equip

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY79\$)	2881.1	3148.6	
(2) Quantity	161298	119943	
(3) Unit Cost	0.018	0.026	-31.956
b. (U) Procurement			
(1) Cost (BY79\$)	1758.7	2143.3	
(2) Quantity	161050	119695	
(3) Unit Cost	0.011	0.018	-39.015

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NAVSTAR GPS, December 31, 1994

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	-37.0	+2.7	-1.4	-35.7
Quantity	-	+1323.8	-	+1323.8
Schedule	+6.8	+616.2	-	+623.0
Engineering	+291.6	+344.0	-	+635.6
Estimating	-67.5	-517.3	+0.5	-584.3
Other	-	-	-	-
Support	+69.2	+514.2	-6.5	+576.9
Subtotal	+263.1	+2283.6	-7.4	+2539.3
Current Changes:				
Economic	-0.4	-16.8	-	-17.2
Quantity	-	3874.9	-	+3874.9
Schedule	31.1	-47.2	-	-16.1
Engineering	-	-	-	-
Estimating	1167.3	189.4	-	+1356.7
Other	-	-	-	-
Support	270.4	848.4	-	+1118.8
Subtotal	+1468.4	+4848.7	-	+6317.1
Total Changes	+1731.5	+7132.3	-7.4	+8856.4
Current Estimate	2904.0	8251.8	7.3	11163.1

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NAVSTAR GPS, December 31, 1994

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	-	+553.0	-	+553.0
Schedule	+4.5	-0.9	-	+3.6
Engineering	+160.6	+239.0	-	+399.6
Estimating	-142.1	-55.0	+0.4	-196.7
Other	-	-	-	-
Support	+38.1	+200.8	-4.1	+234.8
Subtotal	+61.1	+936.9	-3.7	+994.3
Current Changes:				
Quantity	-	1101.8	-	+1101.8
Schedule	13.6	-17.5	-	-3.9
Engineering	-	-	-	-
Estimating	405.4	45.1	-	+450.5
Other	-	-	-	-
Support	84.5	240.6	-	+325.1
Subtotal	+503.5	+1370.0	-	+1873.5
Total Changes	+564.6	+2306.9	-3.7	+2867.8
Current Estimate	1532.2	2930.3	4.7	4467.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Reduction was due to revised economic escalation indices.

Schedule: Increases were due to accelerated design/development of flexible modular interface for tailoring user equipment to host vehicles.

Engineering: Overall increase was due primarily to: development and integration of Block IIR space vehicle improvements; redefinition of the Global Positioning System (GPS) survivability program; and development, testing, and redefinition of requirements for GPS replenishment (Block IIR)

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NAVSTAR GPS, December 31, 1994

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

NAVSTAR GPS Satellite

satellites.

Estimating: Adjustments were made for current and prior year escalation changes. Primary causes for the decrease were future engineering change estimate reductions and Federally Funded Research and Development Center budget cuts. Primary causes for increases included: an additional year of support for control and user segments; additional control segment modifications fiscal year (FY) (FY86-FY88) required for interface with Block II space vehicle; increased scope associated with Block IIR development, contract support (FY01-FY06), and functionality; reimbursement for Operation Desert Storm; realignment of funding from weapons procurement for mission support center and launch critical Block IIR software; additional funding from Operations and Maintenance for sustaining engineering; and funding for sustaining engineering.

Support: Overall increase was attributable to: additional control segment support required prior to turnover to Air Force Space Command; additional support associated with Block IIR development and testing; additional support due to space shuttle launch delays; new requirement for training simulator; and revised estimate for Block IIR satellite support. Primary cause of decreases was a delay in transfer of the ground Master Control Station to the Consolidated Space Operations Center.

Procurement

Economic: Overall increase was due to revised economic indices.

Quantity: Increase was due primarily to addition of 26 Block IIR satellites, 20 on an annual basis and six on options. Five of the six optional satellites have since been deleted from the program. Additional increase was due to the procurement of eight gap-filler Block IIR satellites.

Schedule: Primary cause of increase was a 1-year delay in start of satellite production and change to annual buy of four Block IIR satellites per year. Additional schedule changes resulted primarily from shifting procurement years for optional Block IIR satellites.

Engineering: Primary cause of increase was addition of engineering changes for Block IIR procurement.

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

NAVSTAR GPS Satellite

Decreases were due to deletion of requirements for crosslink ranging, increased hardening, and autonomous housekeeping functions.

Estimating: Adjustments were made for prior and current year escalation changes. Primary causes of overall decrease included: changing from an annual to a multiyear procurement (MYP) approach for Block IIA and IIR; congressional withdrawal of cancellation ceiling for funding the Block IIR MYP; congressional withdrawal of funding for Block IIR engineering design requirements clarification and engineering change orders; realignment of support and flyaway costs for Block IIR reductions; Air Force reprogramming of excess prior year funds; termination price and advance procurement for canceled Block IIR optional satellites; realignment of funding for mission operations support center and launch critical Block IIR software; revised estimate for control system modifications; and realignment of funding to higher priorities.

Increases resulted from: the addition of an orbital insertion and data transfer system (new satellite requirements); additional Block IIR requirements, including storage, launch, and on-orbit support through fiscal year (FY) 06; new ground control system modifications (FY97-FY99); revised estimate for Block IIR launch processing change orders for gap-filler Block IIR satellites (FY96-FY06); and an offset for overstated inflation reductions in the Air Force database.

Support: Overall increase to date was due primarily to the following: a 1-year program extension; the shuttle recovery program; Block IIR procurement and out-year support through FY06; Block IIR support and flyaway; increased technical support from FY93-FY99; initial spares (FY93-FY99) for the ground control system modifications; and realignment of flyaway and support from a previous Selected Acquisition Report (SAR). The main reasons for decreases included Federally Funded Research and Development Center budget reductions, decrease in required contract support, and Air Force reprogramming of excess prior year funding.

MILCON

Economic: Overall decrease was due to revised economic escalation indices.

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

NAVSTAR GPS Satellite

Estimating: The primary cause of the increase was the difference between the President's Budget and required funding.

Support: The overall decrease was due to the deletion of the Consolidated Space Operation Center contingency funding.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices (Economic)	--	-0.4
Realignment of funding profile for full Block IIR functionality (Operational Release 6.B) (FY96-FY01) (Schedule)	+13.6	+31.1
Adjustment for current and prior year escalation (Estimating)	+0.1	+0.2
Reduction of future engineering change order estimates and congressionally directed Air Force Federally Funded Research and Development Center funding reductions (FY94-FY01) (Estimating)	-1.7	-4.2
Reprogramming of excess prior year funds to higher priority Air Force program (FY94) (Estimating)	-0.6	-1.2
Congressional reduction to FY95, cancellation of new starts for follow-on Block of satellites (Block IIF) and Mission Operations Support Center (Estimating)	-3.5	-7.4
Revised estimate for Block IIF satellite development (FY96-FY16) (Estimating)	+232.9	+595.7
Addition of funding for development of next generation satellite (FY06-FY16) (Estimating)	+179.4	+586.9
Inflation decrease in Air Force data base (FY96-FY01) (Estimating)	-1.2	-2.7
Congressional reduction to FY95, cancellation of new start for training simulator (Support)	-3.5	-7.3
Funds added for training simulator (FY96-FY99) (Support)	+2.7	+6.0

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Funds required for Block IIF satellite development program office support (FY00-FY06) (Support)	+26.7	+71.0
Funds added for Block IIF and next generation satellite development program office support (FY07-FY16) (Support)	+58.6	+200.7
RDT&E Subtotal	+503.5	+1468.4
(2) <u>Procurement</u>		
Revised economic escalation indices (Economic)	N/A	-16.8
Deletion of 2 short-term Block IIF satellites from planned buy (FY99) (Quantity)	-48.7	-130.6
Addition of 45 long-term Block IIF satellites (FY00-FY16) (Quantity)	+1034.9	+3509.1
Addition of 6 next generation satellites (FY15-FY16) (Quantity)	+115.6	+496.4
Reprofile of 2 satellites from FY99 to FY97 (Schedule)	-17.5	-47.2
Adjustment for current and prior year escalation (Estimating)	+2.4	+5.5
Adjustment for quantity change due to revised inflation (FY99) (Estimating)	-0.4	--
Reduction of future engineering change order estimates and Congressionally directed Air Force (AF) Federally Funded Research and Development Center funding reductions (FY95) (Estimating)	-0.6	-1.4
Reprogramming of excess prior year funds to higher priority AF programs (FY88-FY94) (Estimating)	-4.2	-9.5
Reprogramming of excess funds from other lower priority AF programs (FY91-FY92) (Estimating)	+3.9	+8.5
Inflation decrease in AF data base (FY96-FY01) (Estimating)	-3.0	-8.0
Funds added for on-orbit performance incentives (FY96-FY01) (Estimating)	+25.9	+67.2

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Realignment of flyaway and support since the December 1993 SAR (FY93-FY99) (Estimating)	-10.8	-27.8
Deletion of funding for space mode erroneously included in previous SARs (FY92-FY99) (Estimating)	-11.8	-26.8
Revised estimate for Block IIR launch requirements (FY96-FY16) (Estimating)	+43.7	+181.7
Revised estimate for Block IIR program office support (FY94-FY06) (Support)	+59.1	+159.8
Inclusion of additional years for Block IIF satellite production program office support (FY07-FY16) (Support)	+171.5	+662.4
Realignment of flyaway and support since the December 1993 SAR (FY93-FY99) (Support)	+10.8	+27.8
Deletion of funding for initial spares associated with space mode erroneously included in previous SARs (FY93-FY98) (Support)	-0.8	-1.6
Procurement Subtotal	+1370.0	+4848.7

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NAVSTAR GPS, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

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

	RD&E	PROC	O&M	TOTAL
Development Estimate	1383.7	3492.1	0.0	4875.8
Previous Changes:				
Economic	-12.0	-49.6	-7.1	-68.7
Quantity	-	-183.8	-20.0	-203.8
Schedule	+20.7	+466.6	-	+487.3
Engineering	-	-46.8	-	-46.8
Estimating	+278.8	+346.1	+105.8	+730.7
Other	-	-	-	-
Support	-17.8	+935.4	-	+917.6
Subtotal	+269.7	+1467.9	+78.7	+1816.3
Current Changes:				
Economic	-1.9	-14.1	-	-16.0
Quantity	-	-110.4	-	-110.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	125.7	-364.2	-	-238.5
Other	-	-	-	-
Support	-	-208.5	3.7	-204.8
Subtotal	+123.8	-697.2	+3.7	-569.7
Total Changes	+393.5	+770.7	+82.4	+1246.6
Current Estimate	1777.2	4262.8	82.4	6122.4

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NAVSTAR GPS, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

a. (U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	O&M	TOTAL
Development Estimate	941.8	1613.1	0.0	2554.9
Previous Changes:				
Quantity	-	-151.5	-10.0	-161.5
Schedule	+10.6	+75.0	-	+85.6
Engineering	-	-21.3	-	-21.3
Estimating	+82.0	+223.7	+48.6	+354.3
Other	-	-	-	-
Support	-5.1	+282.4	-	+277.3
Subtotal	+87.5	+408.3	+38.6	+534.4
Current Changes:				
Quantity	-	-40.8	-	-40.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	53.1	-152.3	-	-99.2
Other	-	-	-	-
Support	-	-69.6	1.4	-68.2
Subtotal	+53.1	-262.7	+1.4	-208.2
Total Changes	+140.6	+145.6	+40.0	+326.2
Current Estimate	1082.4	1758.7	40.0	2881.1

b. (U) Previous Change Explanations --

RD&E

Economic: Overall decrease was due to revised economic escalation indices.

Schedule: Primary cause of increase was acceleration of host vehicle platform integrations.

Estimating: Adjustments were made for current and prior year escalation changes. Primary causes of increase included revisions to engineering and test estimates by all services, extension of program through 2008, revised cost share for development of next generation sets, and additional engineering estimates for development of Global Positioning

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

NAVSTAR GPS User Equip

System (GPS) enhancements. Decreases were as a result of lower estimates for development of next generation user equipment and other enhancements.

Support: Decreases were primarily due to a decrease in the Air Force mission support and contractor support estimates.

Procurement

Economic: Overall decrease was due to revised economic escalation indices.

Quantity: Major cause of decrease was the switch to a non-developmental item procurement strategy for GPS receivers, resulting in substantially reduced unit cost (more than offsetting increased quantities) as well as an overall reduction in requirements for Precision Lightweight GPS Receiver sets and high cost aircraft receiver units.

Schedule: Overall increase was due primarily to restructuring and extending procurement schedules to account for new force structure requirements and accelerated host vehicle integrations. Decreases were primarily due to aircraft force structure reductions.

Engineering: Decrease was due to a value engineering change proposal.

Estimating: Adjustments were made for current and prior year escalation. Primary reasons for overall increase included revision of learning curves to reflect new contracts, new labor estimates, revisions to aircraft integration hardware and installation estimates, increases in recurring unit costs of sea sets, and revised program support costs and aircraft modification estimates. Decreases were caused primarily by unit cost decreases, lower actual prices for aircraft sets, and adjustments for force structure reductions.

Support: Overall increase to date was due to: updated estimates for depot support, user equipment test, and technical support; adjustments necessary for support of increased quantities including spares, fielding, and data costs; and revised estimates to support next-generation GPS requirements. Decreases were due primarily to revised requirements for spares and installation kits, support estimates for sea and ground sets, revised estimates for support; and aircraft support.

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

NAVSTAR GPS User Equip

O & M

Economic: Overall decrease was due to revised economic escalation indices.

Quantity: Decrease was due to a reduction in labor estimates due to reduced quantities for the Navy and Marine Corps.

Estimating: Adjustments were made for current and prior year escalation. Overall increase was due primarily to revised estimate by the Navy and Marine Corps for installation labor, the addition of Marine and Navy requirements, and extension of the estimate for Air Force funding to match procurement phase-in years. Primary reasons for decreases were a reduction in funding for training of operations and maintenance personnel, aircraft support, and a reduced estimate for interim contractor support.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices (Economic)	--	-1.9
Adjustment for current and prior year escalation (Estimating)	+0.2	+0.5
Decreased estimate for development of Global Positioning System (GPS) enhancements (FY94-FY98) - Army (Estimating)	-0.2	-0.2
Increased estimate for development of Selective Availability/Anti-Spoofing Module (SAASM) and other developmental GPS enhancements (FY96-FY01) - Navy (Estimating)	+28.8	+67.0
Increased estimate for development of SAASM and other developmental GPS enhancements (FY96-FY01) - Air Force (AF) (Estimating)	+24.3	+58.4
RDT&E Subtotal	+53.1	+123.8
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	--	-14.1

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13c. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase of 786 aircraft sets (from 133776 to 134562) (FY94-FY98) - Army (Quantity)	+1.7	+3.7
Reduction of 1238 aircraft sets (from 4567 to 3329) (FY94-FY01) - Navy (Quantity)	-31.2	-83.5
Increase of 2306 Precision Lightweight GPS Receivers (PLGRs) (from 7885 to 10191) (FY94-FY00) - AF (Quantity)	+1.0	+2.5
Reduction of 534 aircraft sets (from 5987 to 5453) with decreased aircraft sets (Miniaturized Airborne GPS Receivers and 3A Receivers) (FY94-FY02) - AF (Quantity)	-12.3	-33.1
Adjustment for current and prior year escalation (Estimating)	-1.4	-3.1
Revision to estimates for line replaceable units (LRUs) average unit costs for ground and small air sets (FY94-FY05) - Army (Estimating)	-12.8	-32.0
Revision to recurring unit cost of aircraft sets (FY93-FY01) - Navy (Estimating)	-98.1	-221.2
Revision to aircraft modification estimates based on inputs from aircraft System Program Directors (SPDs) (FY92-FY02) - AF (Estimating)	+24.6	+59.3
Revision to aircraft estimates based on transition to commercial and embedded GPS receivers (FY92-FY02) - AF (Estimating)	-64.6	-167.2
Revised estimates for program support of ground and aircraft sets (FY94-FY05) - Army (Support)	+14.1	+35.9
Revised estimates for air and ground sets (FY91-FY01) - Navy (Support)	-27.9	-88.6
Revised estimates for aircraft support based on inputs from SPDs (FY88-FY02) - AF (Support)	-55.8	-155.8
Procurement Subtotal	-262.7	-697.2

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

NAVSTAR GPS User Equip

(Dollars in Millions)
Base-Year Then-Year

(3) O & M

Revised economic escalation indices (Economic)	--	--
Adjustment for current and prior years escalation (Support)	+0.1	+0.1
Decreased estimate for aircraft support - AF (Support)	-0.2	-0.4
Increased estimate for user equipment support - Navy (Support)	+1.5	+4.0
 O & M Subtotal	<u>+1.4</u>	<u>+3.7</u>

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

NAVSTAR GPS Satellite

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
57.668	-0.448	5.938	5.143	5.386	6.546	--	14.370	36.935	94.603

NAVSTAR GPS User Equip

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.178	-0.001	-0.149	0.003	--	0.003	--	0.004	-0.140	0.038

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NAVSTAR GPS, December 31, 1994

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

a. (U) Procurement --	Initial Contract Price		
(U) <u>BLOCK IIR SATELLITE PROD:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MARTIN MARIETTA, VALLEY FORGE, PA			
FO4071-89-C-0073, FFP	\$580.4	N/A	20
Award: June 1, 1989			
Definitized: October 31, 1990			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$647.2	N/A	21	\$652.4	\$647.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-15.7	\$-34.9
Cumulative Variances To Date (12/31/94)	<u>\$-14.6</u>	<u>\$-42.4</u>
Net Change	\$1.1	\$-7.5

Explanation of Change:

This firm-fixed-price (FFP) contract requires modified cost performance reporting.

In March 1994, Martin Marietta (MM) implemented a "single point adjustment", which incorporated several budget baseline changes. The "single point adjustment" eliminated a large portion of the incurred to date cost and schedule variances. First, it eliminated the artificial schedule variance caused by MM not passing down schedule relief to its subcontractors as a result of the "Operate-Through" contract modification. Second, MM incorporated what had heretofore been designated as fee into the budget baseline. This increased the baseline to the contractual ceiling amount. Finally, MM incorporated an accelerated and compressed build for MM boxes. As a result of the adjustment, the net change to the cumulative cost and schedule variances requires explanation. The March adjustment reset the cumulative cost variance from \$-20.7M to \$-.8M and schedule variance from \$-39.5M to \$-12.9M.

Since the March 1994 rebaselining, the cost variance has deteriorated by \$-13.8M due to negative performance in harness, integration and test, and structure. Corresponding cost variances are being experienced in overhead, material handling, General and Administrative (G&A), and restructuring funding agreement elements. The harness variance results from a greater number of drawing changes than anticipated. Integration and test is experiencing cost variance due to increased support being required by space vehicle one. The structure cost variance is due to rework issues on space vehicle one.

The unfavorable change in the schedule variance since the

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NAVSTAR GPS, December 31, 1994

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

rebaselining (\$-29.5M) is due to poor performance in the following areas: navigation payload; subcontracts; attitude, determination and control; electrical power subsystems; and telemetry, tracking, and command. Corresponding schedule variances are being experienced in G&A, material handling, and overhead. More than 40% of the schedule variance is in navigation payload, caused by delays in the delivery of various parts. An additional 20% of the schedule variance resides in the subcontracts element and is also the result of delays in the delivery of various parts. Some of the reported schedule variance is believed to be 'artificial' due to MM's incorporation of an accelerated build of boxes into their schedule and their subsequent inability to meet that schedule. The variance is exacerbated because credit is not earned until all the effort is completed. We are not able to quantify the precise amount of the 'artificial' schedule variance at this time; however, MM is working to amend this anomaly, with corrections expected over the next few months.

There is no impact to the contract or the program as a result of cost variances. Schedule variances, however, have impacted three milestones. First and second Block IIR contract deliveries have slipped from November 1995 and February 1996 to April 1996 and June 1996, respectively. Availability of first Block IIR satellite for launch has slipped from March 1996 to August 1996.

The current contract price increased from \$617.8M to \$647.2M, reflecting the addition of one satellite to the contract. The contractor's estimated price at completion increased by a like amount, but now includes a \$1.8M decrease for contractor refinements to the completion costs.

(U) <u>OPERATIONAL CONT SYS S/W:</u> LORAL CORPORATION, GAITHERSBURG, MD F04701-90-C-0009, CPAP Award: November 15, 1989 Definitized: November 15, 1989	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$10.1	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$104.8	N/A	0	\$127.6	\$133.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-26.3	\$-1.5
Cumulative Variances To Date (12/23/94)	<u>\$-25.6</u>	<u>\$-0.5</u>
Net Change	\$0.7	\$1.0

Explanation of Change:

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NAVSTAR GPS, December 31, 1994

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

Note: This contract was formerly reported as IBM - Federal Systems Company. On 1 March 1994, they became part of Loral Corporation.

In December 1992, the Joint Program Office (JPO) and Air Force Space Command (AFSPC) approved Block IIR space vehicle changes that required companion changes to Operational Release (OR) 6.0 ground control software. To avoid a delay in the delivery of OR 6.0, in mid-1993 the JPO directed Loral to split OR 6.0 into two deliveries, OR 6.A and OR 6.B. OR 6.A includes only Block IIR launch-critical functions. It is on schedule to support the first Block IIR launch. A stop work order was issued against OR 6.B, which is needed for full functionality. As a result of decisions made during the fiscal year (FY) 96 and feedback from the Air Force Space Command Operational Control Segment architecture study, the JPO will eliminate OR 6.B from this contract. OR 6.B will be acquired via a future competition.

The net change to the cumulative cost variance was \$.7M. The improvement was due to the deliveries of ORs 5.30 and 5.40 and cost improvement measures taken by the contractor. The OR 5.40 software was delivered on schedule in June 1994, and all measurable work against this release is complete. OR 6.A also contributed to the decrease in the cost variance. Loral showed significant improvement in cost performance on this portion of the effort.

The net change to the cumulative schedule variance was \$1.0M. The improvement was due to the delivery of OR 5.40 and the rebaselining of OR 6.A.

There is no impact to the contract or the program as a result of these variances.

The current contract price increased from \$101.9 to \$104.8 due to the completion of negotiations for OR 6.A, the finalization of the Overrun and Equitable Adjustment Proposal for ORs 5.30 and 5.40, and the inclusion of launch critical portions of preliminary interface revision notices for OR 6.A.

The program manager's Estimate At Completion (EAC) is higher than the contractor's due to reserve for technical risk on future effort.

(U) <u>RECEIVERS:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
SCI TECHNOLOGY, INC., HUNTSVILLE, AL			
F04701-90-C-0086, FFP	\$17.1	N/A	599
Award: September 24, 1990			
Definitized: September 24, 1990			

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$63.4	N/A	1744	\$63.4	\$63.4

Explanation of Change:

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

The current contract price increased from \$53.8M to \$63.4M due to the exercise of Option 6 for \$9.1M, the addition of several special studies, and post-production support.

Note: Contract Number F04701-83-C-0031, for Rockwell International to provide Launch Services for Block II/IIA, is more than 90% complete and will no longer be reported.

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 51.2% (22 yrs/43 yrs)
- (2) Percent Program Cost Appropriated: 36.8% (\$6360.9 / \$17285.5)

NAVSTAR GPS Satellite

- (1) Percent Program Completed: 51.2% (22 yrs/43 yrs)
- (2) Percent Program Cost Appropriated: 30.0% (\$3351.2 / \$11163.1)

NAVSTAR GPS User Equip

- (1) Percent Program Completed: 62.9% (22 yrs/35 yrs)
- (2) Percent Program Cost Appropriated: 49.2% (\$3009.7 / \$6122.4)

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NAVSTAR GPS, December 31, 1994

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

Total Program

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

Total Program

<u>Appropriation</u>	<u>Prior Years (FY74-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2016)</u>	<u>Total</u>
RDT&E	2619.8	98.2	123.1	1840.1	4681.2
Procurement	3684.7	509.3	643.1	7677.5	12514.6
MILCON	7.3	-	-	-	7.3
O&M	49.1	4.8	4.1	24.4	82.4
Total	6360.9	612.3	770.3	9542.0	17285.5

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

NAVSTAR GPS Satellite

<u>Appropriation</u>	<u>Prior Years (FY74-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2016)</u>	<u>Total</u>
RDT&E	1277.7	46.6	70.3	1509.4	2904.0
Procurement	2066.2	174.5	214.6	5796.5	8251.8
MILCON	7.3	-	-	-	7.3
O&M	-	-	-	-	-
Total	3351.2	221.1	284.9	7305.9	11163.1

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NAVSTAR GPS, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

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

NAVSTAR GPS User Equip <u>Appropriation</u>	<u>Prior Years</u> (FY74-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2008)	<u>Total</u>
RDT&E	1342.1	51.6	52.8	330.7	1777.2
Procurement	1618.5	334.8	428.5	1881.0	4262.8
MILCON	-	-	-	-	-
O&M	49.1	4.8	4.1	24.4	82.4
Total	3009.7	391.2	485.4	2236.1	6122.4

c. (U) Annual Summary -- NAVSTAR GPS Satellite

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

1974				9.4	6.4	6.4	6.4	8.3
1975				25.5	19.1	19.1	19.1	9.8
1976				72.2	58.9	58.9	58.9	9.4
1977				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

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NAVSTAR GPS, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

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	25.7	3.0
1989				25.5	45.1	45.0	45.0	4.2
1990				18.0	32.9	32.9	32.7	4.0
1991				24.8	46.9	46.8	46.3	4.3
1992				26.3	51.3	51.2	51.1	2.8
1993				28.2	56.2	56.1	55.5	2.7
1994				18.0	36.7	36.6	27.8	2.0
1995				17.2	36.0	17.0	0.2	2.7
1996				21.6	46.6			3.0
1997				31.6	70.3			3.0
1998				55.0	126.0			3.0

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NAVSTAR GPS, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1999				50.6	119.3			3.0
2000				32.4	78.6			3.0
2001				30.4	76.1			3.0
2002				29.1	75.0			3.0
2003				16.9	44.9			3.0
2004				12.7	34.6			3.0
2005				12.6	35.5			3.0
2006				19.0	55.1			3.0
2007				27.5	82.2			3.0
2008				43.8	134.6			3.0
2009				39.0	123.6			3.0
2010				33.5	109.3			3.0
2011				33.0	111.0			3.0
2012				27.0	93.6			3.0
2013				15.7	55.9			3.0
2014				11.7	43.0			3.0
2015				11.3	42.8			3.0
2016				17.5	68.3			3.0

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NAVSTAR GPS, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

Subtot	12			1532.2	2904.0	1258.2	1231.0	
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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		25.1	152.7	256.0	256.0	256.0	8.0
1985	6		130.8	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		136.7	37.8	71.2	71.2	71.2	2.7
1988	4		109.9	46.1	89.9	88.1	88.0	3.0
1989		29.7		33.1	67.5	67.4	67.1	4.2
1990		12.1		20.3	42.1	41.9	41.8	4.0
1991		23.7		73.5	157.5	156.1	155.7	4.3
1992	4		68.1	84.2	183.0	179.8	107.7	2.8
1993	4		65.7	77.5	172.9	146.5	124.0	2.7
1994	4		60.5	69.7	160.0	143.3	29.4	2.0
1995	5		71.5	79.9	188.8	41.9		2.7
1996	4		69.5	71.7	174.5			3.0

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NAVSTAR GPS, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1997	3		76.0	85.6	214.6			3.0
1998	3		75.3	76.5	197.6			3.0
1999		34.8		80.6	214.5			3.0
2000	3		103.8	120.7	330.7			3.0
2001	3		96.9	111.3	314.2			3.0
2002	3		83.5	95.6	277.8			3.0
2003	3		69.9	79.5	238.1			3.3
2004	3		52.3	80.2	247.4			3.0
2005	3		61.5	81.2	257.8			3.0
2006	3		67.8	83.2	272.3			3.0
2007	3		70.0	82.4	277.6			3.0
2008	3		71.5	81.4	282.5			3.0
2009	3		90.3	118.5	423.8			3.0
2010	3		83.5	103.2	380.0			3.0
2011	3		78.1	93.5	354.7			3.0
2012	3		74.9	87.3	340.9			3.0
2013	3		75.6	85.5	344.0			3.0
2014	3		53.7	81.2	336.5			3.0

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NAVSTAR GPS, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2015	3		61.8	81.5	347.8			3.0
2016	3		66.1	81.5	358.3			3.0
Subtot	106	100.3	2348.8	2924.1	8240.9	1858.6	1607.3	

Appropriation: 3080 Other Procurement, Air Force

1987				1.5	2.6	2.6	2.2	2.7
1988				4.7	8.3	8.3	8.3	3.0
Subtot				6.2	10.9	10.9	10.5	

Note: Funding for Space Modifications (Appropriation 3080) has been removed for fiscal years (FY) 89-FY99. It had previously been included in error.

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	118	100.3	2348.8	4467.2	11163.1	3135.0	2856.1	

Note: Expenditures and Obligations reflect program office records as of December 31, 1994.

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NAVSTAR GPS, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1974				1.8	1.2	1.2	1.2	8.3
1975				4.4	3.3	3.3	3.3	9.8
1976				7.8	6.4	6.4	6.4	9.4
1977				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				5.0	8.9	8.9	8.9	4.2

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NAVSTAR GPS, December 31, 1994

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: 2040 Research, Development, Test + Eval, Army (Cont'd)

1990				2.7	5.0	5.0	5.0	4.0
1991				3.3	6.3	6.3	5.3	4.3
1992								2.8
1993								2.7
1994				0.2	0.5	0.5	0.3	2.0
1995				0.2	0.5	0.1		2.7
1996				0.2	0.5			3.0
1997				0.2	0.4			3.0
1998				0.2	0.5			3.0
1999				0.2	0.4			3.0
Subtot	13			117.9	151.0	148.8	147.5	

Appropriation: 2031 Aircraft Procurement, Army

1986	67	3.6	4.0	7.7	13.7	13.7	13.7	2.7
1987	133	1.3	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	

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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: 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	7.6	4.0	11.9	21.1	21.0	20.8	3.0
1989	175	4.3	3.1	7.9	14.5	14.5	12.7	4.2
1990	1092	5.0	5.2	11.0	20.9	19.7	16.8	4.0
1991	74	3.1	3.0	6.1	11.8	11.8	10.8	4.3
1992	37	9.3	1.3	13.6	27.2	27.2	26.8	2.8
1993	11014	4.3	8.2	13.5	27.6	27.6	23.6	2.7
1994	14318	0.1	10.8	15.4	32.4	32.1	16.7	2.0
1995	15017	0.2	8.4	14.8	32.1	4.2	0.3	2.7
1996	15305	0.2	7.8	14.6	32.5			3.0
1997	14026	0.1	5.3	13.7	31.5			3.0
1998	9027	0.1	3.5	9.4	22.3			3.0
1999								3.0
2000	4000		1.8	3.9	9.9			3.0
2001	6000		2.1	9.6	24.9			3.0
2002	11000		3.5	11.3	30.0			3.0
2003	11000		3.3	10.9	30.0			3.0

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NAVSTAR GPS, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2004	11000		3.1	10.6	30.0			3.0
2005	11000		3.0	10.3	30.0			3.0
Subtot	134362	39.4	80.2	197.2	443.2	172.6	143.0	
Army	134575	44.3	88.0	329.1	619.5	346.7	315.8	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1974				6.0	4.1	4.1	4.1	8.3
1975				8.7	6.5	6.5	6.5	9.8
1976				13.5	11.0	11.0	11.0	9.4
1977				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

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NAVSTAR GPS, December 31, 1994

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)

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				29.3	49.4	49.4	49.4	3.0
1989				22.4	39.6	39.6	39.6	4.2
1990				23.1	42.2	42.2	40.0	4.0
1991				25.8	48.8	48.8	46.2	4.3
1992				25.3	49.2	48.9	45.1	2.8
1993				24.7	49.2	48.4	45.8	2.7
1994				24.1	49.1	45.1	27.3	2.0
1995				16.1	33.8	12.0	2.7	2.7
1996				15.6	33.7			3.0
1997				16.9	37.5			3.0
1998				15.8	36.1			3.0
1999				20.6	48.5			3.0
2000				1.3	3.2			3.0
2001				0.7	1.8			3.0
Subtot	89			529.4	889.3	701.6	663.3	

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16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1109 Procurement, Marine Corps

1989	456		1.0	2.2	4.1	4.1	4.1	4.2
1990	504		0.7	0.8	1.6	1.6	1.6	4.0
1991								4.3
1992								2.8
1993	3304	0.1	2.7	2.8	5.8	5.8	5.8	2.7
1994	557		0.4	0.4	0.8	0.8		2.0
Subtot	4821	0.1	4.8	6.2	12.3	12.3	11.5	

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	10.0	4.2
1990	121		3.9	4.6	9.6	9.6	8.8	4.0
1991	24		0.7	1.9	4.0	4.0	2.9	4.3
1992	215		10.8	17.2	38.0	38.0	16.0	2.8
1993	200		11.3	6.9	15.5	15.4	7.4	2.7
1994	573	0.3	9.2	15.3	35.2	17.8	4.0	2.0
1995	364	0.5	7.0	19.3	45.8	6.2	0.5	2.7
1996	322	0.3	6.8	17.9	43.7			3.0

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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: 1506 Aircraft Procurement, Navy (Cont'd)

1997	432	0.3	8.4	23.4	58.9			3.0
1998	386	0.3	9.1	27.3	71.0			3.0
1999	533	0.5	12.4	31.0	82.8			3.0
2000	5	0.1	0.6	5.4	15.0			3.0
2001	4	0.1	0.5	3.5	9.9			3.0
Subtot	3329	2.4	87.1	180.9	443.7	105.3	53.9	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1987	11		0.8	0.8	1.4	1.4	1.4	2.7
1988	6		0.5	0.5	1.0	1.0	1.0	3.0
1989	11		0.7	0.7	1.5	1.5	1.5	4.2
1990	17		0.8	1.1	2.3	2.3	2.3	4.0
1991	11		0.4	0.4	0.8	0.8	0.6	4.3
1992	11		0.5	0.8	1.8	1.8	0.8	2.8
1993	9		0.2	0.2	0.4	0.4	0.2	2.7
1994				0.1	0.3	0.2	0.1	2.0
1995				0.2	0.5	0.1		2.7
1996				0.1	0.3			3.0

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NAVSTAR GPS, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1997				0.1	0.3			3.0
1998				0.0	0.1			3.0
1999				0.0	0.1			3.0
Subtot	76		3.9	5.0	10.8	9.5	7.9	

Appropriation: 1810 Other Procurement, Navy

1986	62	5.7	5.8	12.1	20.0	20.0	20.0	2.8
1987	148	8.1	5.4	13.8	23.6	23.6	23.6	2.7
1988	188	1.3	5.8	7.4	13.2	13.2	13.2	3.0
1989	133	0.4	5.2	6.1	11.2	11.2	10.3	4.2
1990	79	0.6	2.8	3.8	7.2	7.2	6.2	4.0
1991	38	0.1	2.0	3.8	7.3	7.3	6.4	4.3
1992	130	0.1	6.6	8.4	16.9	14.5	14.1	2.8
1993	1840	0.1	4.1	4.4	8.9	8.6	5.8	2.7
1994				2.3	4.9	4.8	3.9	2.0
1995				7.3	15.8	2.5		2.7
1996				0.6	1.3			3.0
1997				2.2	5.1			3.0

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16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1998				2.4	5.6			3.0
1999				2.1	5.2			3.0
2000				2.1	5.2			3.0
2001				2.0	5.3			3.0
Subtot	2618	16.4	37.7	80.8	156.7	112.9	103.5	

Appropriation: 1804 Operation and Maintenance, Navy

1988				1.7	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	6.2	4.3
1992				3.4	6.7	6.7	6.5	2.8
1993				2.3	4.6	4.6	2.6	2.7
1994				1.7	3.5	3.3	2.5	2.0
1995				1.5	3.1	1.1	0.4	2.7
1996				1.7	3.6			3.0
1997				1.4	3.1			3.0
1998				1.5	3.4			3.0

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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: 1804 Operation and Maintenance, Navy (Cont'd)

1999				1.0	2.3			3.0
2000				1.0	2.4			3.0
2001				1.0	2.5			3.0
Subtot				30.9	61.3	41.8	38.1	
Navy	10933	18.9	133.5	833.2	1574.1	983.4	878.2	

Appropriation: 3600 Research, Development, Test + Eval, AF

1974				1.5	1.0	1.0	1.0	8.3
1975				6.4	4.8	4.8	4.8	9.8
1976				19.5	15.9	15.9	15.9	9.4
1977				3.1	2.7	2.7	2.7	4.9
1977T				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

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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)

1984				13.3	19.8	19.8	19.8	3.9
1985				13.5	20.7	20.7	20.7	3.4
1986				16.4	25.8	25.8	25.8	2.8
1987				17.2	28.3	28.3	28.3	2.7
1988				22.4	37.8	37.8	37.8	3.0
1989				21.7	38.3	37.9	37.2	4.2
1990				17.9	32.6	32.6	30.2	4.0
1991				6.7	12.6	12.5	12.1	4.3
1992				7.5	14.7	14.3	12.9	2.8
1993				10.2	20.3	20.2	14.5	2.7
1994				7.9	16.0	15.2	6.0	2.0
1995				4.6	9.7	1.3	0.1	2.7
1996				8.1	17.4			3.0
1997				6.7	14.9			3.0
1998				11.1	25.4			3.0
1999				14.8	34.9			3.0
2000				11.2	27.2			3.0
2001				7.6	18.9			3.0

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NAVSTAR GPS, December 31, 1994

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)

2002				6.9	17.9			3.0
2003				6.9	18.3			3.0
2004				6.8	18.7			3.0
2005				6.8	19.1			3.0
2006				6.7	19.5			3.0
2007				6.7	19.9			3.0
2008				6.6	20.4			3.0
Subtot	146			433.1	733.4	450.7	429.7	

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	19.3	53.8	104.8	104.8	104.8	3.0
1989	327	23.3	15.8	58.6	117.8	117.8	115.0	4.2
1990	207	5.1	9.0	28.2	58.6	58.6	58.0	4.0
1991	36	4.1	8.0	12.8	27.6	27.6	27.6	4.3
1992	65	20.5	9.1	47.0	103.9	103.5	90.5	2.8

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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: 3010 Aircraft Procurement, Air Force (Cont'd)

1993	207	16.3	4.6	41.2	92.9	80.6	48.4	2.7
1994	329	17.5	23.8	73.9	170.5	105.0	19.5	2.0
1995	430	19.6	30.0	83.2	197.7	3.3		2.7
1996	589	26.2	59.0	104.5	255.8			3.0
1997	905	11.6	91.3	131.4	331.2			3.0
1998	891	7.1	111.1	144.7	375.7			3.0
1999	607	2.5	81.3	104.0	278.1			3.0
2000	140	2.3	35.6	58.7	161.8			3.0
2001		2.9		30.8	87.4			3.0
2002		0.2		26.7	78.0			3.0
2003		5.6		27.9	84.1			3.0
2004		5.5		25.8	79.9			3.0
2005		5.3		25.6	81.7			3.0
2006		5.2		25.4	83.5			3.0
2007		5.1		25.2	85.3			3.0
2008		5.0		25.0	87.2			3.0
Subtot	5453	211.0	526.2	1223.2	3068.7	726.4	589.0	

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

NAVSTAR GPS User Equip

Note: Air Force aircraft procurement funding and quantities reflect requirements for aircraft installs (funds controlled within the Global Positioning System (GPS) program element, 35164F), as well as planned GPS modifications to existing aircraft (funds controlled within each aircraft system program director's program element).

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	13.1	4.2
1990	179	0.1	4.3	5.6	10.7	10.7	10.7	4.0
1991								4.3
1992	101		0.1	2.1	4.2	4.2	3.9	2.8
1993	2512		2.2	3.0	6.1	5.7	4.4	2.7
1994	1702		1.4	2.2	4.6	4.6	0.2	2.0
1995	795	0.9	0.5	1.7	3.7			2.7
1996	513		0.3	0.5	1.2			3.0
1997	832		0.4	0.7	1.5			3.0
1998	707		0.3	0.5	1.3			3.0
1999	742		0.2	0.6	1.4			3.0
2000	698		0.2	0.5	1.3			3.0
2001				0.5	1.4			3.0
2002				0.8	2.1			3.0
2003				0.8	2.1			3.0
2004				0.8	2.2			3.0

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16c. (U) Program Funding Summary (Cont'd):
NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

2005				0.8	2.2			3.0
2006				0.8	2.3			3.0
2007				0.7	2.3			3.0
2008				0.8	2.4			3.0
Subtot	10191	2.9	23.9	51.4	102.1	74.3	68.3	

Appropriation: 3400 Operation & Maintenance, Air Force

1992				0.3	0.5	0.5	0.5	2.8
1993				1.2	2.3	2.3	2.3	2.7
1994				0.6	1.3	1.3	0.8	2.0
1995				0.5	1.0	0.1		2.7
1996				0.6	1.2			3.0
1997				0.4	1.0			3.0
1998				0.5	1.1			3.0
1999				0.5	1.1			3.0
2000				0.5	1.1			3.0
2001				0.5	1.2			3.0
2002				0.5	1.2			3.0

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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: 3400 Operation & Maintenance, Air Force (Cont'd)

2003				0.5	1.3			3.0
2004				0.5	1.3			3.0
2005				0.5	1.3			3.0
2006				0.5	1.4			3.0
2007				0.5	1.4			3.0
2008				0.5	1.4			3.0
Subtot				9.1	21.1	4.2	3.6	
USAF	15790	213.9	550.1	1716.8	3925.3	1255.6	1090.6	

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	0.3	0.2	2.7
1994				0.2	0.4	0.3	0.1	2.0
Subtot				2.0	3.5	3.4	3.0	
DoD				2.0	3.5	3.4	3.0	

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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: 0400 RDT&E, Defense Agencies (Cont'd)

Grand Total	161298	277.1	771.6	2881.1	6122.4	2589.1	2287.6	
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Appropriation 0400 Research Development Test and Evaluation (RDT&E),
Defense Agencies is Marine Corps RDT&E - Program Element (PE)
26626M-1319 Appropriation.

Expenditures and Obligations reflect program office records as of
December 31, 1994.

17. (U) Production Rate Data:

NAVSTAR GPS Satellite

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	12/12
Procurement	28/28

All delivered units represent Block II/IIA.

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

	(Average Unit Flyaway Cost)		
	Development <u>Estimate</u>	Current <u>Estimate</u>	Latest Approved <u>Threshold</u>
@ Qty 0 - @ Peak Rate: 0.6/mo			
FY 79 Base-Year \$	20.336	25.868	25.000
Then Year \$	54.812	46.900	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 a and b reflect data for Block II/IIA satellites.

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17a. (U) Production Rate Data (Cont'd):
NAVSTAR GPS User Equip

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	248/248
Procurement	36415/36415

Note: Deliveries for User Equipment were erroneously reflected in the December 1993 SAR.

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

	Development <u>Estimate</u>	Current <u>Estimate</u>	Latest Approved <u>Threshold</u>
(Average Unit Flyaway Cost)			
@ 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

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 Global Positioning System (GPS) spacecraft from the dedicated Master Control Station (MCS) located at Falcon Air Force Base (AFB) CO. Also included are the costs for operating, maintaining, and supporting four dedicated GPS Ground Antennas (GAs) (located at Cape Canaveral Air Force Station (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 transfer 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.

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

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	1.6	N/A
Total	1.6	N/A

Note: Costs reflect funds controlled by the System Program Director as included in the FY96 President's Budget.

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	16.2	---	---	---	16.2
Total	16.2	---	---	---	16.2

Note: Costs reflect funds controlled by the System Program Director as included in the FY96 President's Budget.

NAVSTAR GPS User Equip

a. (U) Assumptions and Ground Rules --

(1) The operations and support costs are the direct costs to repair, replenish and support the Global Positioning System (GPS) user equipment. The maintenance cost includes the material and labor costs at the organizational and 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 user equipment. 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, including their respective batteries and support equipment. Costs reflect updates for the fiscal year (FY)96

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NAVSTAR GPS, December 31, 1994

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

NAVSTAR GPS User Equip

President's Budget.

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 User	Avg Annual Cost Per Antecedent
BELOW DEPOT LEVEL	0.0	N/A
DEPOT LEVEL	2.4	N/A
TRAINING	0.0	N/A
TRANSPORTATION	0.2	N/A
SOFTWARE SUPPORT	1.2	N/A
SE SUPPORT	0.1	N/A
SUSTAINING INVESTMENT	20.8	N/A
SYSTEM/PROJECT MGT	3.9	N/A
Total	28.6	N/A

Note: Current estimates for below depot level and training are below \$50,000 and round down to zero (0.0).

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NAVSTAR GPS, December 31, 1994

18c. (U) Operating and Support Costs (Cont'd):
NAVSTAR GPS User Equip

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	---	---	---	---
Air Force	5.8	0.5	0.4	8.8	15.5
Navy	25.2	---	---	---	25.2
Marine	0.3	---	---	---	0.3
Army	---	---	---	---	---
Total	31.3	0.5	0.4	8.8	41.0

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AF-14 JTIDS

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14-014

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

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
Joint Tactical Information Distribution System (JTIDS)

2. (U) DoD Component: USAF

Joint Participants:
USA/USAF/USMC/USN/BMDO

3. (U) Responsible Office and Telephone Number:
JTIDS Joint Program Office (JPO) GM-15 DAVID CARSTAIRS
ESC/TD Assigned: October 21, 1994
175 Vandenberg Drive AV 478-9226 COMM 617-377-9226
Hanscom AFB, MA 01731-2138

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AND SECURITY REVIEW (OASD-PA)
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95-c-0547

~~Classification, Control, and Distribution Guide, dated 1 May 94~~
~~Ref: OASD-PA, 100-100~~
~~Downgrade instructions: 100-100~~

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JTIDS, December 31, 1994

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

RDT&E:

PE 0205604N
PE 0604232N (Shared) Project X1977
PE 0604702A Project D451
PE 0604754F
PE 0604771D (Shared) Project XP771
PE 0604861C Project 2200
PE 0603713A (Shared) Project D370
PE 0603869C Project 2262
PE 0603216C (Shared) Project 2210

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); Tactical Air Operations Module (TAOM); Modular Control Element (MCE); Air Operations Center (AOC); Airborne Battlefield Command and Control Center (ABCCC); Rivet Joint; Air Intelligence Agency; F-14 Tomcat; Aircraft Carrier (CV); Guided Missile Cruiser (CG); Guided Missile Destroyer (DDG); Army Data Distribution System (ADDS); Forward Area Air Defense (FAAD); High and Medium Air Defense (HIMAD); Ballistic Missile Defense Organization (BMDO) Theatre High Altitude Area Defense (THAAD); BMDO CORPS Surface-to-Air Missile (CORPS SAM).

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.

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7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Full Scale Engineering Development (FSED) of the JTIDS Class 2 Time Division Multiple Access (TDMA) terminal for Air Force and Army applications was authorized by DSARC IIA, 13 Jan 81. Singer-Kearfott Division was awarded the FSED contract for Air Force and Army test and evaluation on 14 Jan 81.

A DSARC IIB approved Full-Scale Development (FSD) for the Navy Distributed TDMA (DTDMA) JTIDS terminal in Jan 82. The Secretary of the Navy subsequently directed use of the Air Force-developed Class 2 TDMA terminals for Navy and Marine Corps platforms in Oct 85. Also in 1985, the Army directed development of a reduced-size, data-only terminal, designated the Class 2M, to meet the needs of the Forward Area Air Defense (FAAD)/High and Medium Air Defense (HIMAD) programs.

Development of a high-powered Class 2 terminal, designated the Class 2H, was initiated in March 1986 to meet the needs of the Air Force E-3A. The Modular Control Equipment (MCE), Tactical Air Operations Module (TAOM), E-2 and Ship platforms were later added to the 2H development.

The basic Class 2 terminal completed initial DT&E/IOT&E in Oct 86, with reliability, maintainability and interoperability deficiencies observed. The Multi-Service Initial Operational Assessment (IOA) in Apr 87 judged system performance to be marginal. Successful completion of Phase I Development Test/Operational Assessment (DT/OA) in May 89 verified corrections of DT&E/IOT&E deficiencies. The DAB IIIA in Oct 89 approved Low-Rate Initial Production (LRIP) of Air Force and Navy Class 2 terminals, but also directed reliability improvements. The JPO established a Reliability Development/Growth program in Jan 90 which successfully demonstrated Class 2/2H/2M terminal Mean-Time-Between-Failure (MTBF) thresholds between Nov 90 and Aug 94.

LRIP contracts for 34 LRIP (Lot 1) terminals were awarded to Plessey Electronic Systems Corporation (FSD leader) and Rockwell International Corporation (FSD follower) in Mar 90. An additional 171 LRIP terminals were awarded yearly on Lots 2-5 from Sep 91 to Oct 94. LRIP for the Navy F-14D, E-2C, and Ships was approved by a 12 Mar 91 Navy Program Decision Meeting (NPDM). NPDM meetings in Sep 92 and Aug 93 approved subsequent Navy LRIP Lot buys.

The first two Tri-Service demonstrations were successfully completed in Nov 91. The Navy Operational Test and Evaluation Force (OPTEVFOR) evaluation of Feb-Mar 92 at-sea tests was potentially operationally suitable/effective. The Commander OPTEVFOR report in Jan 93 withdrew the Navy's operational evaluation due to uncorrected terminal

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

deficiencies. The JPO coordinated a joint strategy to correct Navy terminal deficiencies and complete Navy testing. The Navy then conducted additional DT/OT events in 1993 to verify terminal readiness for TECHEVAL and OPEVAL, scheduled for 1994.

Three JTIDS Affordability and Manufacturing Technology Demonstration (AMTD) contracts were awarded 30 Jun 93 to prove the feasibility of producing a low-cost JTIDS terminal.

The first operational deployment of a fully integrated JTIDS Class 2 platform occurred in Aug 93 when the Airborne Battlefield Command and Control Center (ABCCC) Program began flying a JTIDS-equipped C-130 to support "Operation Deny Flight" in Bosnia. HQ ACC began a one-year Operational Special Project (OSP) at Mt. Home AFB, ID, with JTIDS-equipped F-15C aircraft in Sep 93 to evaluate data link utility in fighter aircraft.

The Army declared air-ground Initial Operating Capability (IOC) of the Class 2M terminal on 23 Sep 93.

b. (U) Significant Developments Since Last Report --
Navy TECHEVAL successfully verified correction of previous terminal integration deficiencies in Mar 94. OPEVAL completed in Aug 94. OPEVAL report released 19 Oct 94 verified that JTIDS was operationally effective/suitable and strongly supported JTIDS fleet introduction. Successful completion of OPEVAL supports critical exit criterion for the Class 2/2H Milestone III Decision in Feb 95.

The F-15 Fighter Data Link (FDL) Operational Special Project (OSP) Interim Report, per Sep 94 USAFWTC Message, determined that the JTIDS Class 2 F-15 terminal substantially increases fighter effectiveness and acts as a force multiplier.

President's Budget Decision (PBD) #102 removed the Army's production funds in FY95, breaching several Class 2M Acquisition Program Baseline (APB) parameters. The Army and Ballistic Missile Defense Office (BMDO) briefed revised Class 2M requirements to the OSD C3I Committee in Aug 94, allowing the JPO to take the necessary actions to support the Class 2M Low-Rate Initial Production (LRIP) Decision in Feb 95. The Army Class 2M Limited User's Test (LUT) was completed in Nov 94. Emerging results indicate that the LUT successfully demonstrated operational effectiveness/suitability for the air/ground Class 2M requirement. Successful completion of the LUT will support the Class 2M LRIP Decision.

The JTIDS system is expected to satisfy mission requirements.

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

c. (U) Changes Since As Of Date --

Air Force Systems Acquisition Review Council (AFSARC) to support a Class 2/2H Milestone III and Class 2M Low-Rate Initial Production (LRIP) Decision successfully completed 1 Feb 95. On 1 Mar 95, USD (A&T) approved full-rate production for the class 2/2H terminal and Low-Rate Initial Production for the class 2M terminal.

8. (U) Threshold Breaches:

There are schedule breaches to the 10 July 1991 DAE Acquisition Program Baseline (APB). Program Deviation Reports (PDRs) were submitted on 7 June 1993, 18 October 1993 and 1 February 1994. A revised APB was submitted on 13 Dec 94. Nunn-McCurdy Unit Cost Reporting is not applicable since there are no fully-configured end items.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
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
TDMA Development Contract Award	JAN 81	N/A	JAN 81
Preliminary OT&E	JAN 81	N/A	JAN 82
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
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	AUG 94 (Ch-1)
Class 2H (E-3)	N/A	SEP 91	MAR 92
Class 2H (E-2) (OPEVAL)	N/A	JUN 93	AUG 94 (Ch-1)
Class 2H (Ships)	N/A	JUN 93	AUG 94 (Ch-1)
Class 2/2H (JSTARS)	N/A	SEP 95	FEB 96 (Ch-2)
Class 2/2H (MCE)	N/A	NOV 95	APR 97 (Ch-3)
Class 2M (FAAD)	N/A	MAY 92	NOV 96 (Ch-4)
Complete Multi-Service Operational Test	N/A	APR 93	NOV 96 (Ch-4)

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

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
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
Class 2H	N/A	MAY 93	MAY 93
Milestone IIIB (Tri-Service DAB)			
Class 2/2H	N/A	OCT 93	FEB 95
Milestone III			
Class 2M (FAAD)	N/A	SEP 93	MAR 97
Full Rate Contract Award			
Class 2/2H	N/A	FEB 94	MAR 95 (Ch-5)
Class 2M (FAAD)	N/A	FEB 94	MAY 97 (Ch-4)
Delivery of 1st Production Unit			
Class 2M (FAAD)	N/A	JUN 96	MAY 99 (Ch-4)
IOC			
Class 2H	SEP 88	SEP 93	FEB 94
Class 2M (FAAD)	N/A	DEC 93	SEP 93

b. (U) Previous Change Explanations --

Actual delivery dates for the first FSD terminals for the Navy was Sep 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. 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

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

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 E-3 Program Office 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. In the Dec 92 SAR, the Navy slipped completion of OPEVAL from Jun 93 to May 94 due to scheduling conflicts with Navy assets and the requirement for additional developmental and operational testing required by OPTEVFOR prior to OPEVAL. The E-3 Program Office informed the JPO that the E-3 IOT&E was completed in Mar 92 vs Feb 92. The Army Class 2M (FAAD) Milestones were "to be determined" as the program was non-executable as currently structured. The first Class 2 terminal was delivered early in Mar 92 vs Apr 92. Milestone IIIB (Now Milestone III) for the Class 2/2H slipped to Feb 95 vs Oct 93 due to the slip in Navy OPEVAL as the Navy OPEVAL is an ADM requirement prior to the Milestone III decision. Full-rate contract award for the Class 2/2H slipped from Feb 94 to Mar 95 due to the Milestone III slip. IOC for the Class 2H slipped from Sep 93 to May 94 due to the revised Carl Vinson Battle Group deployment schedule. In the Dec 93 SAR, the Navy slipped completion of OPEVAL from May 94 to Jul 94 due to scheduling conflicts with Navy assets and the requirement for additional development testing and operational testing required by OPTEVFOR prior to OPEVAL. Joint STARS IOT&E will complete in Nov 95 vs Sep 95 due to test restructuring. MCE IOT&E will complete in Nov 96 vs Nov 95 due to test restructuring. The Army's Class 2M Forward Area Air Defense program was restructured to reflect the Army's Sep 93 re-validation of the air-ground Class 2M program with funding through Low-Rate Initial Production deliveries and the Ballistic Missile Defense Organization Jul 93 decision to join the Class 2M program. 2M IOT&E and Multi-Service Operational Test (MS-OT-III) in Sep 96 vs TBD; Full-Rate Contract Award in Jun 97 vs TBD; and delivery of the 2M First Production Unit in Jun 99 vs TBD. Full-Rate Contract Award for Class 2/2H was rescheduled for May 95 vs Mar 95. Navy Class 2H Initial Operational Capability (IOC) was rescheduled for Feb 94 vs May 94 due to the revised Carl Vinson Battle Group deployment schedule. Army declared IOC for the Class 2M in Sep 93 vs TBD based on the fielding of Class 2M development units.

c. (U) Current Change Explanations --

(Ch-1) The Navy OPEVAL was completed in Aug 94 vs Jul 94 due to scheduling conflicts with Navy assets and the requirement for additional developmental testing and operational testing required by OPTEVFOR prior to OPEVAL.

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

(Ch-2) The Joint STARS Program Office informed the Joint Program Office (JPO) that the JSTARS IOT&E will be completed in Feb 96 vs Nov 95 due to test restructuring.

(Ch-3) The Modular Control Element (MCE) Program Office informed the JPO that the MCE IOT&E will be completed in Apr 97 vs Nov 96 due to test restructuring.

(Ch-4) Class 2M IOT&E and Multi-Service Operational Test (MS-OT-III) is Nov 96 vs Sep 96 due to test restructuring to support Class 2M Milestone III Decision. Full-Rate Contract Award is May 97 vs Jun 97; and delivery of the 2M First Production Unit is May 99 vs Jun 99. Upon approval of a new Acquisition Program Baseline (APB) which will include an LRIP Decision (Feb 95) and Contract Award for the Army's FAAD Class 2M terminals (Nov 95), the Army will receive their First Production Unit in Nov 97 and BMDO will receive their First Production Unit in May 99.

(Ch-5) Full-rate contract award for Class 2/2H is now scheduled for Mar 95 vs May 95 to meet Navy requirements.

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 July 10, 1991.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated 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
MTBF (hr) (Lab) Class 2	500	500 / 400	530	500
Number of Nets	4	N/A / N/A	N/A	N/A

(b)(1)

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

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Communication Range (nm)	300	300 / 200	310/495A	300/500
MTBF (hr) (Field) Class 2	120	120 / 102	221B	120
MEAN Corrective Maintenance Time (min)	30	30 / 60	38	30

A/ 310NM was demonstrated in the normal range mode; 495M was demonstrated in the extended range mode.

B/ Operational Special Project (OSP) at Mt Home AFB, ID. Mt Home OSP demonstrated an MTBCF of 221 hours from Sep 93 through Sep 94.

C/ Phase 2 Reliability Development/Growth Test (RD/GT) MTBF of 530 hours was completed on 9 Aug 94.

ACRONYM:

MTBF - Mean Time Between Failure

MTBCF - Mean Time Between Critical 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 at 150 nm (ft) performance characteristics were deleted and Ranging Accuracy below 150 nm (ft) was added. Ranging Accuracy below 150 nm (ft) for Demonstrated Performance and Current Estimate were erroneously reported in the 1991 and 1992 SARs.

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

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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 July 10, 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	1520.4
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	0.0	0.0
Total FY 81 Base-Year \$	309.0	2329.7	1520.4
Escalation	73.5	1415.0	627.1
Development (RDT&E)	(73.5)	(658.9)	(627.1)
Procurement	(0.0)	(756.1)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	382.5	3744.7	2147.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	971	N/A
Total	0	971	0

Note: Excludes 214 RDT&E prototypes from the Current Estimate that are not considered fully configured.

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

United Kingdom Royal Navy	\$5.2M
France	\$3.3M
Italy	\$2.5M

Commitments to date are 3 development terminals for the United Kingdom Royal Navy, 2 development terminals for France and one development terminal for Italy.

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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 Paper (DCP), dated 31 March 1981.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated July 10, 1991.

12. (U) Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (JUL 91 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY81\$)	1520.4	1499.9	
(2) Quantity	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) Procurement			
(1) Cost (BY81\$)	0.0	0.0	
(2) Quantity	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.

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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	382.5	0.0	0.0	382.5
Previous Changes:				
Economic	-33.8	-	-	-33.8
Quantity	+740.9	-	-	+740.9
Schedule	+22.8	-	-	+22.8
Engineering	+352.7	-	-	+352.7
Estimating	+484.1	-	-	+484.1
Other	-	-	-	-
Support	+56.1	-	-	+56.1
Subtotal	+1622.8	-	-	+1622.8
Current Changes:				
Economic	2.3	-	-	+2.3
Quantity	33.1	-	-	+33.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	106.8	-	-	+106.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+142.2	-	-	+142.2
Total Changes	+1765.0	-	-	+1765.0
Current Estimate	2147.5	-	-	2147.5

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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	+339.4	-	-	+339.4
Other	-	-	-	-
Support	+38.6	-	-	+38.6
Subtotal	+1129.4	-	-	+1129.4
Current Changes:				
Quantity	19.0	-	-	+19.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	63.0	-	-	+63.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+82.0	-	-	+82.0
Total Changes	+1211.4	-	-	+1211.4
Current Estimate	1520.4	-	-	1520.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates. In 1993, USAF Economic Adjustment for Negative Program Change increased escalation.

Quantity: Air Force quantity increases from 15 to 64 development terminals through 1990 to accommodate new platform testing and integration requirements; Army increase from 5 to 51 development terminals through 1988 for testing and integration; Addition of 26 Navy development terminals to joint program in 1987 with an increase from 26 to 32 terminals in 1990 for new platform integration testing; Addition of 27 OSD funded terminals in 1988.

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

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, F-15 IOT&E, Class 2 Logistics, F-15 Group A; decreased 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: Yearly adjustments for current and prior year escalation.

Revised estimates through 1988 for Class 1 work removal; undistributed budget cuts (FY87, FY89); adjustments to correct errors in 31 Dec 83, 31 Dec 84, and 31 Dec 85 SARs; Gramm-Rudman cuts; reinstatement of Army funds managed at OSD; FY 90-94 USAF and Navy estimate increased for follow-on development, testing, and program support and MIDS development and support (USAF); Navy reductions for program restructuring; and increases for platform integration costs not included in early estimates.

In 1989, reduction of FY 90-94 AF and OSD funding; MIDS transferred to Navy.

In 1990, increased estimate for preplanned product improvements; Navy program restructuring impacted FY 87-95; reduction in JTIDS supportability, logistics, interoperability and product improvement due to funding constraints; and additional data link development in FY 95-97.

In 1991, ABCCC integration efforts added; increased Navy estimate for integration in FY 91-94 due to restructuring from fiscal constraints; reduced USAF Preplanned Product Improvements (P3I) effort in FY 91-97 due to fiscal constraints; increased OSD estimate due to revised data link development costs.

In 1992, increases from extension of the FYDP (FY98-99), adjustments for actuals; Navy increases for fiscal years not previously reported (FY

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JTIDS, December 31, 1994

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

95-97); USAF increases (FY 76-80) for previously unreported fiscal year budgets resulting from Program Office Budget Review. OSD reductions resulted from Congressional adjustments.

In 1993, negative adjustment for current and prior year inflation; USAF reductions in Pre-Planned Product Improvements and Interim Software Support Activity at Warner-Robins Air Logistics Center due to Budget Reductions; Navy reductions due to program restructuring from Budget Actions; OSD reductions in Class 2M development support due to Budget Reductions.

Support: Increased to develop, demonstrate, and evaluate direct link between E-3A and HIMAD elements using Class 2 terminals.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised Escalation Indices, 10 January 1995 (Economic)	N/A	+2.3
Addition of 40 development units to support Ballistic Missile Defense Organization (BMDO) THAAD and CORPS SAM programs. (Quantity)	+19.0	+33.1
Total Program Estimating Changes	+63.0	+106.8
Transfer of Army Data Distribution system (ADDS) JTIDS RDT&E Acquisition Program Baseline (APB) funding to JTIDS APB and SAR. (Estimating)	+47.2	+73.0
Adjustment for Current and Prior Year Inflation (Estimating)	-1.9	-2.9
USAF and OSD extension of FYDP (Estimating)	+15.5	+31.3
USAF net decreases FY94-99 due to Budget Decisions (Estimating)	-7.8	-14.5
Navy additions for Pre-Planned Product Improvements (Estimating)	+10.0	+19.9
RDT&E Subtotal	+82.0	+142.2

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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:
GEC-MARCONI, TOTOWA, NJ
F19628-86-C-0035, FFP
Award: December 31, 1985
Definitized: December 31, 1985

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$476.3	N/A	117	\$476.3	\$476.3

	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:

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 (\$26.2M Increase). Pre-Operational Support \$5.0M; FQT-5B Option \$0.2M; Equitable Adjustment \$0.3M; Class 2M Terminal Buy (16 Terminals) \$20.4M; Product Improvement Phase I Update \$0.3M.

Cost and Schedule Variances are not required on FFP contracts.

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: 91.4% (\$1963.1 / \$2147.5)

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JTIDS, December 31, 1994

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

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

Appropriation	Prior Years (FY76-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	1963.1	39.0	41.8	103.6	2147.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1963.1	39.0	41.8	103.6	2147.5

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
1977								
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

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JTIDS, December 31, 1994

16c. (U) 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: 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				3.4	4.6	4.6	4.6	2.7
1988				5.9	8.1	8.1	8.1	3.0
1989				6.2	9.0	9.0	9.0	4.2
1990				7.9	11.8	11.8	11.3	4.0
1991				8.1	12.5	12.5	12.4	4.3
1992				8.4	13.4	13.4	12.8	2.8
1993				3.1	5.1	5.1	4.4	2.7
1994				2.9	4.9	4.9	2.3	2.0
1995				1.9	3.3	0.8		2.7
1996				0.4	0.7			3.0
1997				2.1	3.8			3.0
Subtot				142.1	182.7	175.7	170.4	
Army				142.1	182.7	175.7	170.4	

Obligations and expenditures reflect Army Program Office records as of 31 December 1994.

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JTIDS, December 31, 1994

16c. (U) 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: 1319 Research, Development, Test + Eval, Navy

1987				27.6	37.1	37.1	37.1	2.7
1988				75.1	103.5	103.5	103.5	3.0
1989				78.5	113.5	113.5	113.5	4.2
1990				57.6	85.8	85.8	85.8	4.0
1991				47.5	73.5	73.5	73.5	4.3
1992				38.9	61.9	61.9	59.7	2.8
1993				25.1	40.8	40.8	34.9	2.7
1994				6.9	11.5	11.5	9.2	2.0
1995				3.0	5.1	3.2	0.4	2.7
1996				5.4	9.6			3.0
1997				5.3	9.6			3.0
1998				6.2	11.6			3.0
1999				6.2	12.0			3.0
2000				4.1	8.2			3.0
2001				3.5	7.2			3.0
Subtot				390.9	590.9	530.8	517.6	
Navy				390.9	590.9	530.8	517.6	

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JTIDS, December 31, 1994

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

Obligations and expenditures reflect Navy Program Office records as of 31 December 1994.

Appropriation: 3600 Research, Development, Test + Eval, AF

1976				12.0	8.2	8.2	8.2	6.6
1977								
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
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				15.9	21.9	21.9	21.1	3.0
1989				33.7	48.7	48.7	46.1	4.2
1990				24.2	36.1	36.1	34.4	4.0
1991				24.0	37.1	37.1	30.8	4.3
1992				9.7	15.4	15.4	14.9	2.8
1993				9.3	15.1	15.1	9.9	2.7
1994				7.9	13.1	11.9	4.9	2.0
1995				6.5	11.2	3.4	1.6	2.7

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JTIDS, December 31, 1994

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

		Flyaway			Total Then-Year \$			
Fiscal		FY81 Dollars		Total				Excl
Year	Qty			Base		Obli	Ex	Rate
		Nonrec	Rec	Year\$	Program	gated	pended	(%)

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1996				5.7	10.1			3.0
1997				5.3	9.6			3.0
1998				5.2	9.8			3.0
1999				5.2	10.0			3.0
2000				5.3	10.5			3.0
2001				5.3	10.9			3.0
Subtot				377.4	489.1	419.2	393.3	
USAF				377.4	489.1	419.2	393.3	

Obligations and expenditures reflect JTIDS Program Office records as of 12 January 1995.

Appropriation: 0400 RDT&E, Defense Agencies

1986				154.4	198.3	198.3	198.3	2.8
1987				109.5	147.0	147.0	144.2	2.7
1988				57.0	78.6	78.6	77.2	3.0
1989				41.5	60.0	60.0	60.0	4.2
1990				46.4	69.2	69.2	64.6	4.0
1991				42.8	66.2	66.2	58.4	4.3

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JTIDS, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1992				55.8	88.8	88.8	66.7	2.8
1993				24.6	40.1	40.1	27.4	2.7
1994				24.7	41.0	39.9	13.0	2.0
1995				20.3	34.8	4.1		2.7
1996				10.6	18.6			3.0
1997				10.4	18.8			3.0
1998				3.2	5.9			3.0
1999				3.2	6.2			3.0
2000				3.2	6.4			3.0
2001				2.4	4.9			3.0
Subtot				610.0	884.8	792.2	709.8	
DoD				610.0	884.8	792.2	709.8	
Grand Total				1520.4	2147.5	1917.9	1791.1	

Obligations and expenditures reflect JTIDS Program Office records as of 12 January 1995 and BMDO Program Office records as of 31 December 1994.

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JTIDS, December 31, 1994

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.

b. (U) Cost and Quantity Variances --

No quantities are funded prior to 1998.

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

RDT&E

Procurement

To Date

214/174

0/0

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

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Class 2/2H and Class 2M Terminal Cost Analysis Requirements Descriptions (CARD) serves as the technical baseline for this estimate. The costs reported in this section are the costs to operate, maintain, and sustain the JTIDS Class 2/2H and 2M terminals. Costs are based on 507 Class 2/2H and 313 Class 2M terminals installed in 19 platforms: F-15, Air Intelligence Agency (AIA, RC-135), Airborne Command and Control Center, Mobile Operations Center, E-3A (AWACS), E-8 (JSTARS), Marine TAOM and ATACC, Navy Ships, Submarines, F-14 and E-2C aircraft, Army FAAD, Patriot, JTACS, THAAD, ATMDTOC, and CORPS SAM. The mission personnel costs includes the cost of pay and allowances for personnel directly assigned to operate and maintain the terminals. Unit level consumption includes the cost of operations, maintenance and support materials consumed at the unit level. This includes replenishment and disposal of battery cells, exchange costs for depot level reparable, and recurring training costs for operators and maintainers. Contractor support includes the costs to repair terminals at a contractor's facility. This category is for both interim contract and contractor logistics support. Sustaining support includes support equipment replacement, depot level sustaining engineering/program management support, and software maintenance activities. Indirect support includes civilian and military labor, material and overhead costs specialty training and base support of JTIDS.

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JTIDS, December 31, 1994

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

b. (U) Costs -- (FY 1981 Constant (Base-Year) Dollars in Millions)

Cost Element	JTIDS Average Steady State Cost	JTIDS Average Steady State Cost (Antecedent)
Personnel	0.2	N/A
Unit Level Consumption	16.8	N/A
Sustaining Support	1.5	N/A
Contractor Support	7.1	N/A
Indirect Support	1.5	N/A
Total	27.1	N/A

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	7.4	3.5	0.1	3.9	14.9
Industrial Fund	---	---	---	---	---
Total	7.4	3.5	0.1	3.9	14.9

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A-16 KIOWA WARRIOR

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

PROGRAM: OH-58D Kiowa Warrior

AS OF DATE: December 31, 1994

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CLEATED
FOR ORIGINATOR

MAR 28 1995

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 COL EDWIN P. GOOSEN
ATTN: SPAE-AV-ASH Assigned: July 12, 1992
4300 GOODFELLOW BOULEVARD AV 693-1360 COMM (314) 263-1360
ST. LOUIS, MO 63120-1798

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

RDT&E:

PE 64220 Project D518

PROCUREMENT:

APPN 2031 ICN AA0961 (Army)
APPN 2031 ICN AZ2200 (Army)
APPN 2036 ICN ----- (Army)

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OH-58D Kiowa Warrior, December 31, 1994

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 missiles, 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 targets 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 November 30, 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 January 9, 1981. On September 21, 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 July 23, 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 October 7, 1985, approved the OH-58D for the field artillery aerial observer role. An Armed OH-58D ASARC, held

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OH-58D Kiowa Warrior, December 31, 1994

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

August 8, 1989, recommended approval for arming OH-58D aircraft with ATG weapons. A Secretary of the Army memorandum, dated January 8, 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 name, Kiowa Warrior, for the OH-58D armed AHIP. On May 30, 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. Congressional plus-up of \$133.0M in FY 92 and \$225.0M in FY 93 authorized the procurement of 60 Kiowa Warrior aircraft. In FY 94, Congress added \$122.5M for procurement of 15 Kiowa Warrior aircraft.

b. (U) Significant Developments Since Last Report --
The appropriation of \$120M by the FY 95 Joint Conference will procure 16 OH-58D Kiowa Warrior aircraft (Lot 12).

(U) The OH-58D Kiowa Warrior aircraft is 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 Acquisition Program Baseline (APB) dated March 9, 1994. A Program Deviation Report has been submitted. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Second Production Contract Award (44) (FY85)	JUN 85	OCT 85	OCT 85
First Production Deliveries Start	N/A	DEC 85	DEC 85

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OH-58D Kiowa Warrior, December 31, 1994

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

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	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	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	TBD (Ch-1)
KW Eighth Production Contract Award (ANG)	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
KW First Production Contract Award (Retrofit)	N/A	DEC 91	JAN 92
KW Ninth Production Contract Award	N/A	APR 92	APR 92
KW Eighth Production Delivery Start (ANG)	N/A	JUL 92	JUL 92

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OH-58D Kiowa Warrior, December 31, 1994

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

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
KW First Production Delivery Start (Retrofit)	N/A	SEP 92	DEC 92
KW First Unit Equipped	N/A	MAY 93	MAY 93
KW Second Production Contract Award (Retrofit)	N/A	DEC 92	DEC 92
KW Initial Operational Capability	N/A	MAY 93	JUN 93
KW Tenth Production Contract Award	N/A	MAR 93	MAR 93
KW Ninth Production Delivery Start	N/A	JUL 93	JUN 93
KW Third Production Contract Award (Retrofit)	N/A	DEC 93	JAN 94
KW Eleventh Production Contract Award	N/A	FEB 94	FEB 94
KW Tenth Production Delivery Start	N/A	SEP 94	AUG 94
KW Fourth Production Contract Award (Retrofit)	N/A	DEC 94	JAN 95 (Ch-2)
KW Eleventh Production Delivery Start	N/A	SEP 95	SEP 95
KW Final Production Delivery	N/A	APR 96	AUG 97 (Ch-3)
KW Last Unit Equipped	N/A	FEB 97	JUN 98 (Ch-4)

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.

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 withhold which delayed testing program initiation; a prerequisite to the IPR. KW First Production Contract Award (Retrofit) slipped from Dec 91 to Jan 92 and KW First Production Delivery Start (Retrofit) changed from Sep 92 to Jan 93 and then changed from Jan 93 to Dec 92. Qualification Test Contract Award slipped from Dec 90 to Apr 91, Qualification Test Start, slipped from Jan 91 to Jun 91. Inadequate FY 92 RDT&E appropriations caused the Qualification Test Completion

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

to slip from Sep 92 to Dec 93 when FY 93 RDT&E funds were available. PEO IPR changed from May 92 to Apr 92. Based on ODCSOPs guidance, KW First Unit Equipped date slipped from Nov 92 to May 93 and the KW Initial Operating Capability slipped from May 93 to Jun 93. Qualification Test Completion date slipped from Dec 93 to May 94 when the Rocket Gas Ingestion required an Engine Compression Stall test. KW Ninth Production Delivery Start changed from Aug 93 to Jun 93 to reflect the actual start date. KW Third Production Contract Award (Retrofit) slipped from Dec 93 to Jan 94 because appropriated funds weren't available in Dec 93. KW Eleventh Production Contract Award changed from N/A to Feb 94 and KW Eleventh Production Delivery Start changed from N/A to Sep 95 to reflect FY 94 Joint appropriation funding for Lot 11. KW Last Unit Equipped date slipped from Sep 96 to Feb 97 due to insufficient FY 94 appropriated funding to buy retrofitted aircraft.

c. (U) Current Change Explanations --

(Ch-1) Qualification Test Completion date slipped from May 94 because of additional testing requirements and lack of RDT&E funding to complete the A&FC test. PM can not provide a completion date until a funding source is located to complete the testing.

(Ch-2) KW Fourth Production Contract Award (Retrofit) changed from Dec 94 to Jan 95 because appropriated funds were not available in Dec.

(Ch-3) KW Final Production Delivery slipped from Aug 96 to Aug 97. The addition of Lot 12 aircraft stretched out the delivery schedule.

(Ch-4) KW Last Unit Equipped date slipped from Feb 97 to Jun 98. Funding reductions in FY 95 and FY 96 stretched out the retrofit schedule into FY 97. This extended the forecast for Last Unit Equipped to Jun 98.

d. (U) References --

(U) Development Estimate:

SDDMs, August 31, 1982 and October 7, 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated March 09, 1994.

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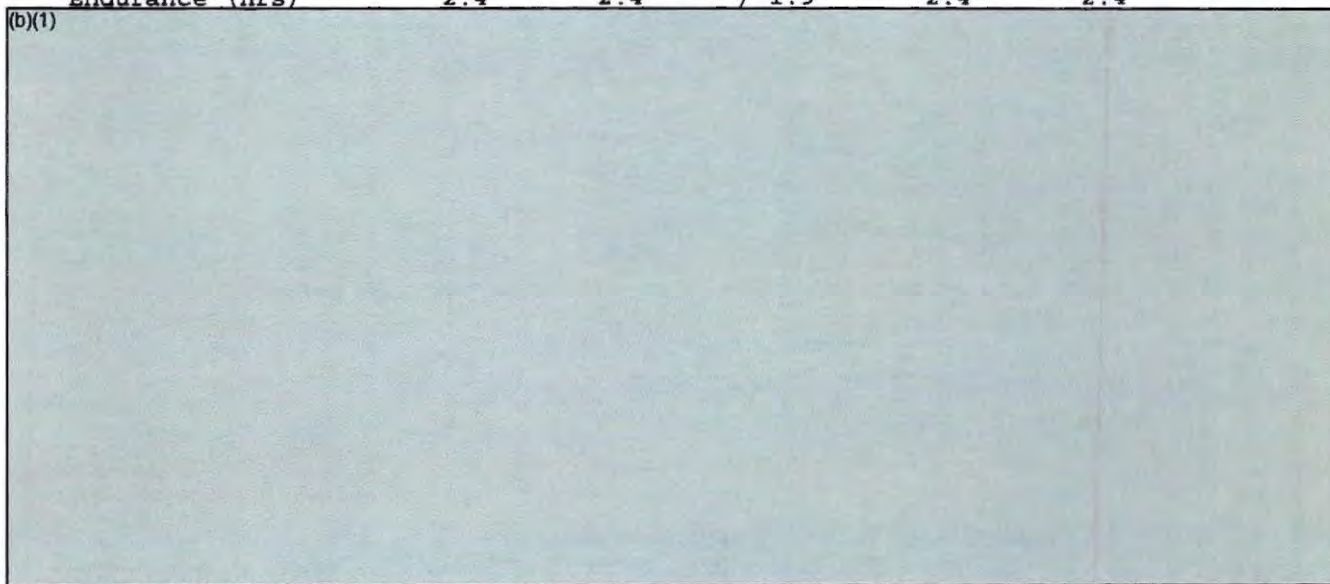
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10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated 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
Forward Flight Speed (KTAS)	112	107 / 100	118	118
Endurance (hrs)	2.4	2.4 / 1.9	2.4	2.4

(b)(1)



Mean Time Between Mission					
Mean Time Between Mission Affecting Failure (hrs) (4 hr mission)	4.4	4.4	/ 4.4	8.7	8.7
Mean Time Between Failure (hrs) (Specification)	N/A	6.98	/ 6.98	7.2	7.2
Sortie Rate (Flight hours per month)					
Peacetime:	20	20	/ 20	20	20
Wartime:					
Initial Surge	112	112	/ 112	112	112
Sustained	65	65	/ 65	65	65
Maintenance Ratio (Manhours/Flight Hour)					

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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(AVUM)	3.0	2.2 / 3	TBD	3.0
(AVIM)	N/A	1.5 / 1.5	TBD	1.5
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, August 31, 1982 and October 7, 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated March 09, 1994.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	213.5	240.3	241.5
Procurement	1454.4	1858.3	1954.5
Airframe	(329.7)		(577.7)
Engine	(67.6)		(70.5)
MMS/CDS	(559.1)		(675.2)
Other Avionics	(148.9)		(75.5)
Armament	(0.0)		(212.5)
Nonrecurring	(47.6)		(20.1)
Total Flyaway	(1152.9)		(1631.5)
Other Weapon Systems	(44.3)		(144.8)
Peculiar Support	(176.6)		(49.8)
Initial Spares	(80.6)		(128.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 82 Base-Year \$	1667.9	2098.6	2196.0
Escalation	863.7	888.3	944.0
Development (RDT&E)	(14.6)	(23.8)	(24.5)
Procurement	(849.1)	(864.5)	(919.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2531.6	2986.9	3140.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>578</u>	<u>366</u>	<u>382</u>
Total	578	366	382

Note: Excludes 5 RDTE prototypes from the SAR Baseline and 5 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- Commitments to date are for 26 aircraft for Taiwan for a total case value of \$327 million.

d. (U) Nuclear Costs -- None

e. (U) References --

(U) Development Estimate:

SDDMs, August 31, 1982 and October 7, 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

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

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated March 09, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>VCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY82\$)	2196.0	2098.6	
(2) Quantity	382	366	
(3) Unit Cost	5.749	5.734	0.258
b. (U) Procurement			
(1) Cost (BY82\$)	1954.5	1858.3	
(2) Quantity	382	366	
(3) Unit Cost	5.116	5.077	0.771

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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	228.1	2303.5	0.0	2531.6
Previous Changes:				
Economic	-3.1	-302.4	-	-305.5
Quantity	-	-593.7	-	-593.7
Schedule	-	+246.7	-	+246.7
Engineering	+58.6	+869.0	-	+927.6
Estimating	-19.5	+190.8	-	+171.3
Other	-	-	-	-
Support	-	+8.9	-	+8.9
Subtotal	+36.0	+419.3	-	+455.3
Current Changes:				
Economic	0.1	-13.6	-	-13.5
Quantity	-	50.1	-	+50.1
Schedule	-	16.2	-	+16.2
Engineering	1.9	61.5	-	+63.4
Estimating	-0.1	30.6	-	+30.5
Other	-	-	-	-
Support	-	6.4	-	+6.4
Subtotal	+1.9	+151.2	-	+153.1
Total Changes	+37.9	+570.5	-	+608.4
Current Estimate	266.0	2874.0	-	3140.0

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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	-	-426.6	-	-426.6
Schedule	-	+100.1	-	+100.1
Engineering	+42.4	+534.3	-	+576.7
Estimating	-15.6	+179.3	-	+163.7
Other	-	-	-	-
Support	-	+16.8	-	+16.8
Subtotal	+26.8	+403.9	-	+430.7
Current Changes:				
Quantity	-	28.9	-	+28.9
Schedule	-	6.1	-	+6.1
Engineering	1.3	35.2	-	+36.5
Estimating	-0.1	21.3	-	+21.2
Other	-	-	-	-
Support	-	4.7	-	+4.7
Subtotal	+1.2	+96.2	-	+97.4
Total Changes	+28.0	+500.1	-	+528.1
Current Estimate	241.5	1954.5	-	2196.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Inclusion of the Optical Improvement Program (OIP).
Inclusion of the Kiowa Warrior and MPLH programs.

Estimating: 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 Dec 87 SAR. Adjustments to training device development and testing estimates. Adjustments for current and prior inflation offset. Delay of RDTE funding caused schedule slippage resulting in PEO reprogramming of funds. Program

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

cut reduced test program/MPLH development/2nd source development for .50 caliber machine gun. Funding provided for continuation of MPLH and trainer development. Funding for avionics development items such as High Frequency Radio, Improved Data Modem, and Automated Mission Planning Station.

Procurement

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

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.
Increase of aircraft from 255 to 315.
Increase of aircraft from 315 to 366.

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 Symbolology System (ADSS) card. Armament and armament integration for 12 aircraft. Inclusion of engine reliability and maintainability enhancement program. Funding reduction for the CDS Processor Upgrade and the RAMEP Engine Program.

Estimating: Funding reductions (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

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

Support: 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 contract, contracting strategy change, and refinement of equipment requirements. Correction to Dec 91 SAR sunk cost to database. Congressional rescission. Definitization of contract mods, refinement of estimates, learning curve adjustments, changes in contracting strategy. Correction of quantity allocation from 255 to 315. Funding reduction eliminated 36 aircraft from the retrofit of AHIPS to Kiowa Warrior aircraft. Funding reduction from one time cost savings from second sourcing and contract breakout.

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 facilitate 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. Adjustment for current and prior inflation. Revised estimate for initial spares. Definitization of peculiar support equipment. Sustaining material changes.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Funding for the development of the Crew Station Mission Equipment Trainer (CSMET). (Engineering)	+1.3	+1.9
RDT&E Subtotal	+1.2	+1.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-13.6
Adjustment for Current & Prior Inflation. (Estimating)	+7.4	+10.8
Total allocation associated with increase of 16 aircraft (from 366 to 382).	+74.9	+129.6
Allocation associated with change in procurement of airframes (from 366 to 382). (Quantity)	+13.1	+22.7
Allocation associated with change in procurement of Mast Mounted Sight/Control Display System (MMS/CDS) (from 366 to 382). (Quantity)	+13.7	+23.8
Allocation associated with change in procurement of Engine (from 366 to 382). (Quantity)	+1.0	+1.7
Allocation associated with change in procurement of Communication/Navigation Equipment (Com/Nav) (from 366 to 382). (Quantity)	+1.1	+1.9
Allocation associated with change in procurement of airframes (from 366 to 382). (Schedule)	+6.1	+16.2
Allocation associated with change in procurement of airframes (from 366 to 382). (Engineering)	+32.4	+56.7

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Allocation associated with change in procurement of airframes (from 366 to 382). (Estimating)	+7.4	+6.5
Funding for development of Rocket Blast Deflectors. (Engineering)	+2.8	+4.8
Funding reduction results in reduction of quantity of AHIPs retrofitted to Kiowa Warrior aircraft in FY 96 (from 36 to 33). (Estimating)	+2.4	+4.2
Funding reduction results in reduction in quantity of RAMEP engine and CDS Processor Upgrade Kits. (Estimating)	-4.0	-7.3
Funding reduction results in 7 fewer (from 45 to 38) AHIPs retrofitted to Kiowa Warrior aircraft in FY 95. (Estimating)	-8.4	-13.0
Definitization of contract modifications, refinement of estimates, learning curve adjustments. (Estimating)	-8.0	-14.3
Funding increase for the retrofit of 33 AHIPs to Kiowa Warrior aircraft (from 0 to 33). (Estimating)	+24.5	+43.7
Adjustment for Current & Prior Inflation. (Support)	+2.1	+2.5
Increase in initial spares requirements for additional aircraft. (Support)	+1.6	+2.8
Increase in Peculiar Support Equipment resulting from changes in basis of issue plan. (Support)	+0.1	+0.3

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase in other weapon systems (tech data and fielding) cost for additional aircraft. (Support)	+0.9	+0.8
 Procurement Subtotal	 +96.2	 +151.2

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4.380	-0.835	0.825	0.688	2.594	0.528	--	0.040	3.840	8.220

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

The following contracts 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.

DAAJ09-92-C-0512, 9TH/10TH PRODUCTION MMS
DAAJ09-93-C-0119, ARMED RETROFIT LOT 2

a. (U) Procurement --

(U) <u>11TH PROD BUY (AIRFRAME):</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BELL HELICOPTER TEXTRON, DALLAS/FT WORTH, TX			
DAAJ09-94-C-0145, FFP	\$36.9	\$0.0	15
Award: N/A			
Definitized: August 1, 1994			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$36.9	\$0.0	15	\$36.9	\$36.9

Explanation of Change:

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

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

(U) <u>11TH PROD (MMS):</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
MCDONNELL DOUGLAS, HUNTINGTON BEACH, CA					
DAAJ09-94-C-0152, FFP	\$35.0	\$0.0	15		
Award: N/A					
Definitized: September 1, 1994					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$35.0	\$0.0	15	\$35.0	\$35.0	

Explanation of Change:

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

(U) <u>9TH/10TH PROD BUYS (A/F):</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
BELL HELICOPTER, DALLAS/FT WORTH, TX					
DAAJ09-92-C-0502, FFP	\$96.2	\$0.0	36		
Award: April 30, 1992					
Definitized: July 31, 1992					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$196.8	\$0.0	72	\$196.8	\$196.8	

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: 88.9% (16 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 97.1% (\$3047.8 / \$3140.0)

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDTEE	264.1	0.7	1.2	-	266.0
Procurement	2783.7	78.0	12.3	-	2874.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3047.8	78.7	13.5	-	3140.0

Expenditures and obligations as of December 13, 1994.

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1980			8.4	8.4	7.4	7.4	7.4	10.6
1981			26.5	26.5	25.6	25.6	25.6	10.6
1982			37.6	37.6	38.5	38.5	38.5	7.6
1983			69.5	69.5	73.9	73.9	73.9	4.0
1984			45.7	45.7	50.4	50.4	50.4	3.8
1985			17.9	17.9	20.3	20.3	20.3	3.4
1986			6.2	6.2	7.2	7.2	7.2	2.8
1987								

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1988								
1989								
1990								
1991			15.3	15.4	21.6	21.6	21.6	4.3
1992			6.4	6.4	9.2	9.2	9.2	3.0
1993			6.8	6.8	10.0	10.0	6.3	2.7
1994								2.0
1995								2.7
1996			0.4	0.4	0.7			3.0
1997			0.7	0.7	1.2			3.0
Subtot			241.4	241.5	266.0	264.1	260.4	

Appropriation: 2031 Aircraft Procurement, Army

1983				32.4	38.3	38.3	38.3	8.9
1984	16	20.0	138.5	163.4	199.5	199.5	199.5	7.1
1985	44		143.5	185.6	233.5	233.5	233.5	3.4
1986	39		124.8	178.5	230.7	230.7	230.7	2.8
1987	36		103.3	133.6	179.3	179.3	179.3	2.7

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

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

1988	36		108.1	117.9	164.2	164.2	156.2	3.0
1989	36		137.5	158.7	229.6	229.6	229.6	4.2
1990	36		119.4	127.5	191.3	191.3	191.3	4.1
1991			4.1	9.9	15.3	15.3	15.3	4.3
1992	36		187.4	206.1	328.5	328.5	328.5	3.0
1993	36		168.0	198.5	324.6	314.5	281.0	2.7
1994	15		115.7	135.9	228.5	164.3	42.1	2.0
1995	16		104.8	129.1	223.3	8.2	0.1	2.7
1996			31.3	43.7	78.0			3.0
1997			0.2	6.7	12.3			3.0
Subtot	346	20.0	1486.6	1827.5	2676.9	2297.2	2125.4	

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 96 through 97 are for hardware for the Kiowa Warrior Retrofit Program.

Appropriation: 2036 National Guard Equipment, Army

1991	36		124.9	127.0	197.1	197.1	197.1	4.3
Subtot	36		124.9	127.0	197.1	197.1	197.1	

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OH-58D Kiowa Warrior, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 2036 National Guard Equipment, Army (Cont'd)

Grand Total	382	20.0	1852.9	2196.0	3140.0	2758.4	2582.9	
----------------	-----	------	--------	--------	--------	--------	--------	--

17. (U) Production Rate Data:

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

	<u>To Date</u>
RD&E	5/5
Procurement	329/330

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

(Average Unit Flyaway Cost)

	Development <u>Estimate</u>	Current <u>Estimate</u>	Latest Approved <u>Threshold</u>
@ Qty 578 - @ Peak Rate: 10.0/mo			
FY 82 Base-Year \$	1.990	4.270	4.600
Then Year \$	3.190	6.302	5.520
@ Qty 116 (1st three years) - @ Peak Rate: 10.0/mo			
FY 82 Base-Year \$	2.800	4.311	5.290
Then Year \$	3.820	5.396	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

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OH-58D Kiowa Warrior, December 31, 1994

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

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 Thousands)

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	49.3	2.4	1.2	---	52.9
Total	49.3	2.4	1.2	---	52.9

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(06A)823)
PROGRAM: TRIDENT II SUBMARINE

AS OF DATE: December 31, 1994

<u>SUBJECT</u>	<u>INDEX</u>	<u>PAGE</u>
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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 RADM GEORGE P. NANOS
 DEPARTMENT OF THE NAVY Assigned: June 30, 1994
 WASHINGTON, DC 20376-5002 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)

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TRIDENT II SUBMARINE, December 31, 1994

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

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TRIDENT II SUBMARINE, December 31, 1994

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 SSBNs 735 and 736 deployed in October 1990 and in September 1991 respectively. The SSBN 737 was delivered in June 1991 and deployed in June 1992. The SSBN 738 was delivered in June 1992 and deployed in June 1993. The SSBN 739 delivered in June 1993. Target Delivery Dates were accelerated for SSBNs 741-743 from 31 August 1995-1997 to 23 June 1995, 21 June 1996, and 20 June 1997 respectively, although the Contract Delivery Dates remain the same.

b. (U) Significant Developments Since Last Report --

The USS NEBRASKA (SSBN 739) conducted its Post Shakedown Availability (PSA) from February to April 1994 and deployed for its first Deterrent Patrol in June 1994. The USS MAINE (SSBN 741) "Floated Off" in April 1994 and the Ceremonial Launch was conducted in July 1994. The USS RHODE ISLAND (SSBN 740) was delivered on 22 June 1994 and commissioned on 9 July 1994. Electric Boat continues to project accelerated Target Delivery Dates for the remaining three TRIDENT hulls (SSBNs 741-743) from 31 August 1995-1997 to 23 June 1995, 21 June 1996, and 20 June 1997 respectively.

The Ohio Class D-5 Capable Submarine is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

The USS MAINE Initial Criticality was achieved in January 1995 and will begin Sea Trials in mid-April 1995. The USS RHODE ISLAND will commence its PSA in late February 1995 and will deploy for its first deterrent patrol during the summer of 1995.

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.

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TRIDENT II SUBMARINE, December 31, 1994

9. (U) Schedule:

a. (U) Milestones --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Last Ship	JAN 88	JUN 92	DEC 90
Delivery:			
First Ship	DEC 88	DEC 88	NOV 88
Last Ship	DEC 93	APR 98	JUN 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	JUN 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 were revised in the December 31, 1990 SAR to reflect a total program of ten submarines vice thirteen in the December 31, 1989 SAR.

Electric Boat decided to accelerate the Target Delivery Dates for the four remaining TRIDENT hulls: from 1 July 1994 to 24 June 1994 for SSBN 740 and from 31 August 1995-1997 for SSBNs 741-743 to 23 June 1995, 21 June 1996, and 20 June 1997 respectively.

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

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TRIDENT II SUBMARINE, December 31, 1994

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

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 December 31, 1988.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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)

Endurance

Range	UN- LIMITED	UN- LIMITED	/ UN- LIMITED	UN- LIMITED	UN- LIMITED
Stores (days)	90	90	/ 90	90	90
Armament					
Missile Tubes	24	24	/ 24	24	24
Torpedo Tubes	4	4	/ 4	4	4

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 December 31, 1988.

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TRIDENT II SUBMARINE, December 31, 1994

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

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	49.3	62.1	65.3
Procurement	9980.0	14471.5	11922.5
Sailaway	(9743.3)		(11756.4)
Other Weapon System	(236.7)		(166.1)
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	12411.8
Escalation	3536.3	2925.1	1847.5
Development (RDT&E)	(3.6)	(4.6)	(6.4)
Procurement	(3416.8)	(2845.9)	(1765.9)
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	14259.3

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 December 31, 1988.

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TRIDENT II SUBMARINE, December 31, 1994

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

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 88 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY83\$)	12411.8	14958.2	
(2) Quantity	10	13	
(3) Unit Cost	1241.18	1150.63	7.87
b. (U) Procurement			
(1) Cost (BY83\$)	11922.5	14471.5	
(2) Quantity	10	13	
(3) Unit Cost	1192.25	1113.19	7.10

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TRIDENT II SUBMARINE, December 31, 1994

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	-3.1	-2858.8	-40.7	-2902.6
Quantity	-	+6288.6	-	+6288.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+20.0	-2958.6	-95.6	-3034.2
Other	-	-	-	-
Support	-	-122.6	-	-122.6
Subtotal	+16.9	+348.6	-136.3	+229.2
Current Changes:				
Economic	-0.3	59.2	-	+58.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	2.2	-96.0	-	-93.8
Other	-	-	-	-
Support	-	-20.2	-	-20.2
Subtotal	+1.9	-57.0	-	-55.1
Total Changes	+18.8	+291.6	-136.3	+174.1
Current Estimate	71.7	13688.4	499.2	14259.3

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TRIDENT II SUBMARINE, December 31, 1994

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	+14.7	-2299.1	-95.6	-2380.0
Other	-	-	-	-
Support	-	-61.3	-	-61.3
Subtotal	+14.7	+2006.8	-95.6	+1925.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	1.3	-55.0	-	-53.7
Other	-	-	-	-
Support	-	-9.3	-	-9.3
Subtotal	+1.3	-64.3	-	-63.0
Total Changes	+16.0	+1942.5	-95.6	+1862.9
Current Estimate	65.3	11922.5	424.0	12411.8

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. Adjustment for current and prior year inflation. Revised estimates based on latest contract experience.

Procurement

Economic: Revised economic escalation indices. Adjustment for negative program changes.

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TRIDENT II SUBMARINE, December 31, 1994

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

Quantity: Six additional submarines through December 1989
SAR. Deletion of three submarines in December 1990
SAR.

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. Adjustment for current and
prior year escalation. Revised estimates.

Support: Correction to reconcile sailaway and support costs
in prior SARs. Adjustment for current and prior
year escalation. Revised estimates.

MILCON

Economic: Revised escalation indices.
Estimating: Revised construction estimates for Kings Bay.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.3
Revised estimates based on latest contract experience. (Estimating)	+1.0	+1.9
RDT&E Subtotal	+1.3	+1.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+27.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	+31.9
Adjustment for Current & Prior Inflation. (Estimating)	-22.6	-38.9
Revised estimates based on latest contract experience. (Estimating)	-32.4	-57.1
Adjustment for Current & Prior Inflation. (Support)	+1.1	+1.9
Revised estimates. (Support)	-10.4	-22.1
Procurement Subtotal	-64.3	-57.0

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TRIDENT II SUBMARINE, December 31, 1994

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2012.2	-284.4	25.2	--	--	-312.8	--	-14.3	-586.3	1425.9

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 --				Initial Contract Price		
(U) <u>SUBMARINE GROUP VII SHIP:</u>				<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL DYNAMICS, GROTON, CT						
N00024-88-C-2000, FPIF				\$1837.9	\$2077.6	3
Award: January 5, 1988						
Definitized: January 5, 1988						
Current Contract Price				Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		<u>Contractor</u>	<u>Program Manager</u>	
\$1907.4	\$2156.7	3		\$1892.7	\$1935.3	
Previous Cumulative Variances				<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (10/01/94)				\$-4.7	\$-1.5	
Net Change				\$38.9	\$21.8	
				\$43.6	\$23.3	

Explanation of Change:

The cost and schedule variances have improved since last report and are not significant. The Program Manager's estimate at completion remains within the Program Manager's budget.

General Dynamics, Electric Boat Division, previously accelerated the Target Delivery Dates for SSBN 740-742 from August 1994-1996 to late June in their respective years. Electric Boat delivered the first ship of this contract (SSBN 740) on 24 June 1994, two days ahead of its accelerated Target Delivery Date. The current Contract Delivery Dates for SSBNs 741 and 742 remain unchanged.

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TRIDENT II SUBMARINE, December 31, 1994

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

(U) <u>SUBMARINE (NUCLEAR):</u>			Initial Contract Price		
WESTINGHOUSE ELECTRIC CO., SCHENECTADY, NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-85-C-4011, CPFF	\$197.5	N/A	0		
Award: December 3, 1984					
Definitized: December 3, 1984					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$186.0	N/A	0	\$186.0	\$186.0	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Under Naval Nuclear 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) <u>NUCLEAR PROPULSION:</u>			Initial Contract Price		
DEPT OF ENERGY, GERMANTOWN, MD	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-67-F-5110, EAO	\$442.7	N/A	0		
Award: July 1, 1977					
Definitized: July 1, 1977					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$589.9	N/A	0	\$589.9	\$589.9	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

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TRIDENT II SUBMARINE, December 31, 1994

15. (U) Contract Information (Cont'd):
See previous Explanation of Change.

			Initial Contract Price		
			Target	Ceiling	Qty
(U) <u>SUBMARINE GROUP VIII SHP:</u>					
General Dynamics, Groton, CT					
N00024-91-C-2120, FPIF			\$765.0	\$876.0	1
Award: December 19, 1990					
Definitized: December 19, 1990					
			Estimated Price At Completion		
Current Contract Price			Contractor	Program Manager	
Target	Ceiling	Qty			
\$767.0	\$878.2	1	\$744.0	\$781.5	
			Cost Variance	Schedule Variance	
Previous Cumulative Variances			\$-6.1	\$-12.4	
Cumulative Variances To Date (10/01/94)			\$-0.6	\$-5.1	
Net Change			\$5.5	\$7.3	

Explanation of Change:

The cost and schedule variances are not significant.

General Dynamics Electric Boat Division previously accelerated the Target Delivery Date for SSBN 743 from 31 August 1997 to mid-June 1997. The current Contract Delivery Date remains unchanged.

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

a. (U) Program Status --

- (1) Percent Program Completed: 83.3% (15 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 99.8% (\$14228.3 / \$14259.3)

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TRIDENT II SUBMARINE, December 31, 1994

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

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

<u>Appropriation</u>	<u>Prior Years (FY81-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98)</u>	<u>Total</u>
RDT&E	69.7	1.0	1.0	-	71.7
Procurement	13659.4	11.5	9.3	8.2	13688.4
MILCON	499.2	-	-	-	499.2
O&M	-	-	-	-	-
Total	14228.3	12.5	10.3	8.2	14259.3

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY83 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Oblig- ated</u>	<u>Ex- pended</u>	

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	5.4	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

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TRIDENT II SUBMARINE, December 31, 1994

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: 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	1.0	2.8
1993				0.6	0.9	0.9	0.9	2.7
1994				0.5	0.7	0.2	0.2	2.0
1995				0.6	0.9			2.7
1996				0.7	1.0			3.0
1997				0.6	1.0			3.0
Subtot				65.3	71.7	68.3	67.2	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1981	1		1358.9	1434.9	1463.6	1430.0	1375.3	9.6
1982				317.4	333.5	333.5	332.6	7.5
1983	1		1351.3	1170.1	1249.4	1234.9	1204.6	3.8
1984	1		1224.7	1438.6	1566.4	1565.2	1487.7	3.6
1985	1		1193.5	1173.5	1303.3	1303.3	1285.2	2.1
1986	1		1123.4	1032.6	1173.5	1173.5	1152.3	1.4
1987	1		1143.2	1114.5	1295.2	1294.0	1249.1	1.5
1988	1		1111.2	1107.9	1325.3	1314.4	1240.7	2.6

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TRIDENT II SUBMARINE, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (\$)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1989	1		1091.3	1090.0	1341.7	1271.7	1108.7	3.3
1990	1		1068.3	945.6	1196.9	1066.1	748.3	1.1
1991	1		1090.6	997.9	1301.3	1155.2	598.6	1.6
1992				59.5	80.0	79.9	76.8	2.5
1993				7.9	10.7	10.3	10.3	3.2
1994				8.4	11.8	5.3	0.9	4.1
1995				4.7	6.8			2.7
1996				7.7	11.5			3.0
1997				6.1	9.3			3.0
1998				5.2	8.2			3.0
Subtot	10		11756.4	11922.5	13688.4	13237.3	11871.1	

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

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TRIDENT II SUBMARINE, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1987				109.7	131.1	131.1	131.1	2.7
1988				59.6	73.8	73.8	70.0	3.0
1989				28.5	36.7	32.5	27.7	4.2
1990				18.8	24.9	19.0	19.0	4.0
Subtot				424.0	499.2	489.1	480.5	
Grand Total	10		11756.4	12411.8	14259.3	13794.7	12418.8	

17. (U) Production Rate Data:

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

	<u>To Date</u>
RDT&E	0/0
Procurement	7/7

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

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

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. The source of the costs displayed is the Program Manager's estimate.

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TRIDENT II SUBMARINE, December 31, 1994

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 Submarine	Avg Annual Cost Per Submarine
Repair	9.600	N/A
OPTAR	0.900	N/A
Manpower	8.000	N/A
Total	18.500	N/A

Costs are based on Program Manager's Estimate.

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS-DD-COMP(0&A)823)
 PROGRAM: TRIDENT II MISSILE

AS OF DATE: December 31, 1994

	INDEX	
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1. (U)	<u>Designation and Nomenclature (Preferred Name):</u> Sea Launched Ballistic Missile-UGM 133A TRIDENT II (D-5) Missile	
2. (U)	<u>DoD Component:</u> Navy	
3. (U)	<u>Responsible Office and Telephone Number:</u> STRATEGIC SYSTEMS PROGRAMS DEPARTMENT OF THE NAVY WASHINGTON, DC 20376-5002	RADM GEORGE P. NANOS Assigned: June 30, 1994 AV 327-0456 COMM (703) 607-0453
4. (U)	<u>Program Elements/Procurement Line Items:</u> RDT&E: PE 0603371N Project J0951 PE 0604363N Project J0951 PROCUREMENT: APPN 1507 ICN 1150 (Navy)	

AS AMENDED

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TRIDENT II MISSILE, December 31, 1994

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

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

were conducted and the PEM flight test program completed in February 1990.

Effective with the FY 1994 President's Budget, annual missile quantities were reduced from 48 to 24 per year, flight test program requirements were significantly reduced, and the missile procurement objective was reduced to 428 for the outload of ten TRIDENT II submarines vice 779 for eighteen submarines.

The FY 1995 President's Budget further reduced annual missile quantities from 24 per year in FY 1995 and subsequent years to 18 in FY 1995 and 12 per year thereafter. The Navy began looking at ways to preserve the industrial base in a cost-effective manner. Based on revision of several program planning factors, the missile procurement objective was reduced to 389 from 428 for the outload of ten TRIDENT II submarines.

The following TRIDENT II (D-5) submarines have completed strategic loadout and have deployed; the SSBN 734 in March 1990, the SSBN 735 in October 1990, the SSBN 736 in September 1991, the SSBN 737 in June 1992, and the SSBN 738 in May 1993.

b. (U) Significant Developments Since Last Report --

The TRIDENT II (D-5) missile procurement program has been revised to support a force level of 14 TRIDENT II submarines based on the conclusions of the Department of Defense Nuclear Posture Review. Four TRIDENT I (C-4) configured submarines will be backfit to the TRIDENT II (D-5) configuration beginning in FY 2000. The new inventory objective of 434 missiles reflects the requirement to outload 14, vice 10, submarines as well as a further reduction in the annual D-5 testing rate from 6 to 4.

The acquisition strategy adopted by the Navy for D-5 production is to gradually restructure the production capacity to enable future production of critical components at reduced rates. However, the current industrial infrastructure will not support production of critical components at rates lower than those currently procured and retain the quality, reliability and safety characteristics required and demonstrated by the D-5 system. Therefore, a small number of D-5 missiles will be fully funded in FY 1996 but will be augmented by critical component production continuity quantities as required. The TRIDENT II D-5 missile production strategy is tailored to meet the unique circumstances presented by the near term need to maintain production capability and the long term need for D-5 missiles to support the 14 SSBNs required by the Nuclear Posture Review. It represents an approach which minimizes annual funding requirements while maintaining quality, reliability and safety standards.

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

The USS NEBRASKA (SSBN 738) completed strategic loadout and deployed on 28 May 1994. The SSBN 740 successfully completed two Demonstration and Shakedown Operations (DASO) in August and November of 1994 respectively.

This system will satisfy its mission requirements.

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

8. (U) Threshold Breaches:

There is currently a threshold breach in the Procurement Current Estimate (BY\$) to the DAE Approved Acquisition Program Baseline of April 28, 1993 of more than 5% reflecting the increased total program cost for the additional missiles to support 14 vice 10 D-5 SSBNs. A Program Deviation Report and a Proposed Acquisition Program Baseline will be forwarded to the Service Acquisition Executive. There are currently no Nunn-McCurdy unit cost breaches.

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 mal 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.

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

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 April 28, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demon- strated	Current
-----------------------	---------------------	-------------------	---------

(b)(1)

b. (U) Previous Change Explanations --

Latest estimate of military characteristics for the warhead for the TRIDENT II (D-5) MK-5 Re-Entry Body as cited by the joint DOD/DOE Military Liaison Committee in letter dated July 23, 1984.

Latest estimate of system reliability as provided in TRIDENT II (D-5) Decision Coordinating Paper (DCP) Update of February 24, 1987.

Maximum Range Full Payload, System Reliability, and System CEP estimates are based on latest engineering estimate provided by the Navy to the Joint Chiefs of Staff with later revisions based on available submarine launch data.

c. (U) Current Change Explanations --

(b)(1)

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

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 April 28, 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)	8434.9	8420.5	8414.3
Procurement	17588.5	11421.5	12098.9
Flyaway	(14471.2)		(8763.6)
Other weapon systems	(3082.9)		(3233.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(101.4)
Construction (MILCON)	532.9	363.2	365.4
Ops. and Maint. (O&M)	0.0	N/A	0.0
Total FY 83 Base-Year \$	26556.3	20205.2	20878.6
Escalation	8962.2	6085.6	7289.0
Development (RDT&E)	(1018.3)	(998.9)	(996.2)
Procurement	(7808.4)	(5020.1)	(6221.4)
Construction (MILCON)	(135.5)	(66.6)	(71.4)
Ops. and Maint. (O&M)	(0.0)	(N/A)	(0.0)
Total Then-Year \$	35518.5	26290.8	28167.6

b. (U) Quantity --			
Development (RDT&E)	30	28	28
Procurement	815	428	434
Total	845	456	462

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

(b)(1)

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TRIDENT II MISSILE, December 31, 1994

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

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 April 28, 1993.

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

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (APR 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY83\$)	20878.6	20205.2	
(2) Quantity	462	456	
(3) Unit Cost	45.192	44.310	1.991
b. (U) Procurement			
(1) Cost (BY83\$)	12098.9	11421.5	
(2) Quantity	434	428	
(3) Unit Cost	27.878	26.686	4.466

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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	-21.5	+357.3	-10.4	+325.4
Quantity	-48.0	-11433.4	-	-11481.4
Schedule	-	+1546.5	+25.6	+1572.1
Engineering	-	-	-	-
Estimating	+26.8	-135.0	-253.8	-362.0
Other	-	-	-	-
Support	-	-59.1	-	-59.1
Subtotal	-42.7	-9723.7	-238.6	-10005.0
Current Changes:				
Economic	-0.1	-47.5	-	-47.6
Quantity	-	1657.2	-	+1657.2
Schedule	-	22.4	-	+22.4
Engineering	-	-	-	-
Estimating	0.1	347.5	7.0	+354.6
Other	-	-	-	-
Support	-	667.5	-	+667.5
Subtotal	-	+2647.1	+7.0	+2654.1
Total Changes	-42.7	-7076.6	-231.6	-7350.9
Current Estimate	9410.5	18320.3	436.8	28167.6

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

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-6294.0	-	-6334.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.3	-408.7	-169.8	-559.2
Other	-	-	-	-
Support	-	-99.6	-	-99.6
Subtotal	-20.7	-6802.3	-169.8	-6992.8
Current Changes:				
Quantity	-	807.9	-	+807.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.1	187.2	2.3	+189.6
Other	-	-	-	-
Support	-	317.6	-	+317.6
Subtotal	+0.1	+1312.7	+2.3	+1315.1
Total Changes	-20.6	-5489.6	-167.5	-5677.7
Current Estimate	8414.3	12098.9	365.4	20878.6

b. (U) Previous Change Explanations --

RDTE

Economic: Revised escalation indices. Adjustment for negative program change.
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 and based on new contract experience.

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

Procurement

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

Quantity: Additional 56 missiles required for two additional submarines and subsequent deletion of 443 missiles associated with reduced flight test program requirements and with decision to support a 10-boat TRIDENT II submarine force vice an 18-boat force. While maintaining a 10-boat force, the annual missile quantities have been further reduced resulting in a decrease in the missile inventory objective from 428 to 389.

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. Program stretch-out from FY 1999 to FY 2000.

Estimating: Reclassification of costs as escalation for current and prior years and revised estimates based on latest contract experience. Increased costs due to missile production stretch-out. Adjustment made for quantity allocation.

Support: Reclassification of costs as escalation for current and prior years and revised estimates on support items based on current pricing. Increased support associated with stretch-out of missile production. Deletion of D-5 Backfit outfitting costs at SWFPAC, Bangor. Decreased support due to a reduction of 39 missiles.

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. Deletion of West Coast D-5 capability.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD ⁴³⁷		
Revised economic escalation indices.	N/A	-0.1
(Economic)		

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+0.1	--
(2) <u>Procurement</u>		
Revised economic escalation indices. (Economic)	N/A	-47.5
Quantity Variance resulting from increase of 45 missiles. (Quantity)	+807.9	+1657.2
Estimating Variance resulting from Quantity Allocation. (Estimating)	-62.1	-127.2
Change in annual procurement buy profile due to program stretch-out. (Schedule)	--	+22.4
Adjustment for Current & Prior Inflation. (Estimating)	+13.7	+21.0
Revised estimates due to a change in acquisition strategy. (Estimating)	+235.6	+453.7
Adjustment for Current & Prior Inflation. (Support)	+3.2	+4.7
Increased support due to the addition of 45 missiles. (Support)	+314.4	+662.8
Procurement Subtotal	+1312.7	+2647.1
(3) <u>MILCON</u>		
Increased costs associated with D-5 Backfit program. (Estimating)	+8.7	+16.2
Deleted funds in FY 1992 for A-School relocation. (Estimating)	-6.4	-9.2
MILCON Subtotal	+2.3	+7.0

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TRIDENT II MISSILE, December 31, 1994

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

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

PAUC (Dev 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 SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
42.034	0.601	13.582	3.451	--	-0.016	--	1.317	18.935	60.969

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

a. (U) Procurement --

(U) MISSILE FOLLOW-ON PROD:
LOCKHEED, SUNNYVALE, CA
N00030-92-C-0092, CPIF/FF
Award: October 1, 1991
Definitized: October 1, 1991

Initial Contract Price		Qty
Target	Ceiling	
\$1185.5	N/A	51

Current Contract Price		
Target	Ceiling	Qty
\$1212.0	N/A	51

Estimated Price At Completion	
Contractor	Program Manager
\$1205.4	\$1205.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-12.9	\$-1.1
Cumulative Variances To Date (11/27/94)	\$-5.0	\$-2.8
Net Change	\$7.9	\$-1.7

Explanation of Change:

The favorable cost variance change is due to firm fixed price sub-contracted "actuals" realized at less than negotiated values at the prime.

The schedule variance change is insignificant.

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TRIDENT II MISSILE, December 31, 1994

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

(U) <u>MISSILE FOLLOW-ON PROD:</u>			Initial Contract Price		
LOCKHEED, SUNNYVALE, CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00030-93-C-0093, CPIF/FF	\$1118.7	N/A	39		
Award: October 1, 1992					
Definitized: October 1, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1117.9	N/A	39	\$1113.6	\$1110.9	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-3.8	\$-5.2	
Cumulative Variances To Date (11/27/94)			\$-5.3	\$-2.1	
Net Change			\$-1.5	\$3.1	

Explanation of Change:

The cost variance change is insignificant.

The favorable schedule variance change is due to recovery from delivery difficulties in the sub-contracted component area. This contract includes funding for 18 (D-5) missiles for the United Kingdom.

(U) <u>MISSILE FOLLOW-ON PROD:</u>			Initial Contract Price		
LOCKHEED, SUNNYVALE, CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00030-94-C-0094, CPIF/FF	\$832.1	N/A	24		
Award: October 1, 1993					
Definitized: October 1, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$939.8	N/A	24	\$940.8	\$940.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date (11/27/94)			\$-1.1	\$-0.1	
Net Change			\$-1.1	\$-0.1	

Explanation of Change: None.

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TRIDENT II MISSILE, December 31, 1994

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

a. (U) Program Status --

- (1) Percent Program Completed: 60.0% (18 yrs/30 yrs)
- (2) Percent Program Cost Appropriated: 79.8% (\$22480.2 / \$28167.6)

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

<u>Appropriation</u>	<u>Prior Years (FY78-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2007)</u>	<u>Total</u>
RDT&E	9410.5	-	-	-	9410.5
Procurement	12649.1	522.0	358.5	4790.7	18320.3
MILCON	420.6	-	-	16.2	436.8
O&M	-	-	-	-	-
Total	22480.2	522.0	358.5	4806.9	28167.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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
1982				198.4	198.4	197.6	193.6	7.6
1983				343.9	351.0	346.6	341.2	4.9

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TRIDENT II MISSILE, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1984				1368.5	1447.3	1446.9	1439.7	3.8
1985				1818.1	1982.6	1982.6	1980.6	3.4
1986				1731.3	1942.3	1942.3	1940.2	2.8
1987				1355.1	1565.3	1565.3	1554.6	2.7
1988				862.5	1029.7	1024.7	996.5	3.0
1989				439.3	546.5	546.5	546.5	4.2
1990				130.9	169.5	169.5	169.5	4.0
1991				32.1	43.0	43.0	43.0	4.3
1992				1.6	2.2	2.2	2.2	2.8
1993				0.3	0.4	0.4	0.3	2.7
Subtot	28			8414.3	9410.5	9399.5	9336.5	

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	1326.6	2.7
1988	56		1314.1	1562.7	2033.5	2033.5	2026.3	3.0
1989	66		1173.2	1359.8	1839.0	1838.9	1807.0	4.2

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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	Ex- pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1990	41		796.1	1000.7	1400.6	1398.7	1343.4	4.0
1991	52		865.5	1053.3	1512.6	1510.0	1459.7	4.3
1992	28		554.3	743.7	1096.9	1095.2	992.8	2.8
1993	21		476.9	648.2	978.1	963.5	657.1	2.7
1994	24		637.9	710.7	1102.1	940.8	262.1	2.0
1995	18		379.8	419.7	670.2	397.2	54.3	2.7
1996	6		112.1	317.4	522.0			3.0
1997	7		121.6	211.6	358.5			3.0
1998	7		124.8	207.4	361.9			3.0
1999	7		132.8	226.6	407.2			3.0
2000	12		193.6	339.1	627.6			3.0
2001	12		194.7	343.0	654.0			3.0
2002	12		274.3	336.8	661.5			3.0
2003	12		273.9	360.4	729.0			3.0
2004	12		150.8	186.3	388.1			3.0
2005	10		147.4	240.3	515.7			3.0
2006				48.6	107.5			3.0
2007				148.6	338.2			3.0

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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: 1507 Weapons Procurement, Navy (Cont'd)

Subtot	434		8763.6	12098.9	18320.3	12189.9	10586.9	
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Procurement costs in FY 2007 include cost to complete funding through FY 2027.

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	62.7	62.3	4.3
1992								2.8
1993								2.7
1994								2.0
1995								2.7
1996								3.0

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1997								3.0
1998								3.0
1999								3.0
2000				1.1	1.9			3.0
2001				4.4	8.0			3.0
2002				2.1	4.0			3.0
2003								3.0
2004								3.0
2005				0.3	0.7			3.0
2006				0.8	1.6			3.0
Subtot				365.4	436.8	374.6	373.7	
Grand Total	462		8763.6	20878.6	28167.6	21964.0	20297.1	

MILCON funding in FY 1992 has been deleted since last report due to cancellation of proposed relocation of A-School from DAMNECK to Kings Bay. MILCON costs in FY 2000 through FY 2006 are associated with the Backfit of 4 C-4 boats to the D-5 configuration.

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17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	28/28
Procurement	271/271

b. (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 Program Manager's estimate as reflected in the FY 1996 President's Budget through FY 2001 and extended through FY 2027. O&S costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Weapon System	Avg Annual Cost Per Weapon System
O&M,N	423.900	N/A
OPN	41.700	N/A
WPN	2.800	N/A
Total	468.400	N/A

The increase in Average Annual Costs Per Weapon System from last report is based on a TRIDENT II (D-5) missile procurement inventory objective of 434 for the outload of fourteen TRIDENT II submarines, which includes the backfit of 4 C-4 boats to the D-5 configuration.

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TRIDENT II MISSILE, December 31, 1994

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&MN	739.800	22.000	22.600	643.300	1427.700
Total	739.800	22.000	22.600	643.300	1427.700

The reduction in Consulting Services (CS) from last report results from a revised Navy interpretation of the new SECNAVINST 4200.31C which provides the Navy policy for acquiring and managing CS. A thorough review was performed on tasks that were formerly classified as CS for TRIDENT II. All efforts that were identified as either "routine engineering and maintenance", "providing a standalone product", or were considered non-severable from development or production contractors were removed from the CS classification.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: DDG 51 DESTROYER

AS OF DATE: December 31, 1994

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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
Assigned: August 2, 1995
AV 332-7395 COMM (703) 602-7395

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

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

RDT&E:

PE 0604307N

PROCUREMENT:

APPN 1611 ICN 24222N (Navy)

5. (U) Related Programs:

CG 47, Joint Tactical Information Data System (JTIDS), NAVSTAR GPS,
EHF SATCOM, UHF SATCOM, SM-2 (MR), TOMAHAWK, HARPOON, PHALANX/ESSM,

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5. (U) Related Programs (Cont'd):

AN/SQQ-89, MK-46, MK-50 Torpedo, LAMPS MK-I/MK-III, VERTICAL LAUNCH, VERTICAL LAUNCH ASROC, Armed Helicopter (SH-60), AEGIS Japanese FMS.

6. (U) Mission and Description:

- The DDG 51 is a multi-mission guided missile destroyer designed to operate offensively and defensively, independently, or 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 (AWS), which has quick reaction time, high firepower, and improved Electronic Countermeasures (ECM) capability in Anti-Air Warfare (AAW). The ships' Anti-Submarine Warfare (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. Two helicopters configured for either ASW or Anti-Surface Warfare (ASU) are deployed on Flight IIA ships (DDG 79 and follow). The AWS is the heart of an integrated combat system that provides area coverage and command/control focus in all dimensions of Naval Warfighting and Joint Military Operations: AAW; ASW; ASU; Command, Control, Communications & Intelligence (C3I); and Strike Warfare (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 Controllable Pitch 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, as the result of full and open competition, 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, as the result of full and open competition, the DDG 52 construction contract in May 1987. Milestone IIIA which granted

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

limited production approval through FY 1989 was approved in October 1986. Approval for limited production was amended in each subsequent year.

SECDEF's Major Warship Review in 1991 validated the Navy requirement for the ARLEIGH BURKE Class and approved the introduction of Flight upgrades. Flight II was incorporated in the last ship in FY 1992 (DDG 72).

DDG 51 ship custody transfer occurred on 29 April 1991 and was commissioned USS ARLEIGH BURKE on 4 July 1991. The ARLEIGH BURKE deployed with 6th Fleet forces in the Mediterranean. SCN funding for ARLEIGH BURKE completed in February 1993 at a final cost of \$1093M (FY 83\$), \$7M below the \$1100 (FY 83\$) threshold for the lead ship established by SECNAV in February 1983. Ships 6-10 are estimated to be \$118M (FY 83\$) below the \$700M (FY 83\$) SECNAV unit cost threshold.

The Navy, in conjunction with the shipbuilders and prime equipment contractors, has successfully identified and developed affordability and acquisition reform initiatives that have reduced the cost of this class while ensuring critical operational performance is maintained. These cost reductions are reflected in the FY 96/97 Biennial Budget Estimates.

The Office of the Secretary of Defense established the DDG 51 Flight IIA program as an ACAT ID in July 1992. The DDG 51 Flight IIA Milestone IV Program Review Group (PRG)/Defense Acquisition Board (DAB) held on 19 October 1993 was successful and approved the Flight IIA introduction in FY 94. An Acquisition Decision Memorandum (ADM) was signed on 2 February 1994 finalizing the outcome of the DDG 51 Flight IIA Milestone IV PRG/DAB review. The ADM approved the Flight IIA introduction on the last FY 94 ship and a continuation of the program at a 3 ship per year profile for a total program of 57 ships.

The Navy allocated the FY 1994 and FY 1995 DDG 51 class destroyers on an equal basis between BIW and ISI. The objective of this allocation is to provide contracts at reasonable profits which will protect the viability of the complex combatant shipyard industrial base. These profits will be achieved by establishing more realistic target costs when compared to a competitive award. This allocation award pattern provides a two year window of stability which allows implementation of proposed cost saving initiatives, stabilizes shipbuilder resource planning and investments, and improves each shipyard's competitiveness for commercial and foreign military shipbuilding contracts. For FY 96 and beyond, ASN(RDA) is conducting an

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

acquisition study to develop a strategy for future DDG 51 ship acquisition.

b. (U) Significant Developments Since Last Report --
The Shock Trial on the USS JOHN PAUL JONES (DDG 53) successfully completed in June 1994. The ship's performance under shock was outstanding. Warfighting and Full Power capability were maintained or quickly regained after each detonation. A complete trial report is in progress and will be forwarded to OSD in March 1995.

The FY 94 ship construction contracts were awarded on 20 July 1994. BIW was awarded two ships, including the first Flight IIA ship (DDGs 77 and 79), and ISI was awarded one ship (DDG 78).

As a result of the FY 95 Appropriation Act, the program had to descope GFE equipment. This issue will be addressed in the 1995 Ship Cost Adjustment (SCA).

The FY 96/97 Biennial Budget Estimate reflects two ships vice three in FY 96 and FY 98, which results from reductions in the DDG 51 ships FYDP profile from 3 to 2.7 ships per year since the FY 95 Budget Estimates. The reduction in ships will have industrial base impacts on the DDG 51 program. A loss of work to both shipyards and combat and ship system providers will result from ships being reduced in the FYDP. Shipbuilders and major contractors can be expected to experience a loss of production efficiencies, reduced capital investment, and manpower industrial base erosion. Unit costs for the two FY 96 ships reflect these impacts as well as increases in overhead rates. The acquisition study referred to above will address a strategy to deal with these pressures on cost and preserve the shipbuilding industrial base.

The FY 96/97 Biennial Budget Estimate reflects AEGIS Combat System Warfighting Upgrades being introduced on the last ship in FY 96 (Baseline 6, Phase II) which include: Advanced Display Consoles, ID Upgrades, Battle Force Tactical Trainer (BFTT), Radar Set Controller Environmental Simulator (RSCES) and Tactical Information Communications Analyzer (Data Link Management).

DDG 51 Class construction has achieved numerous production milestones since the last report. The more significant are:

USS JOHN S. MCCAIN (DDG 56) commissioned 2 July 1994
DDG 72 (MAHAN) started fabrication 17 July 1994
DDG 64 (CARNEY) launched 23 July 1994
USS STOUT (DDG 55) commissioned 13 August 1994
DDG 57 (MITSCHER) ship custody transfer occurred 3 October 1994

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

DDG 65 (BENFOLD) launched 9 November 1994

DDG 58 (LABOON) ship custody transfer occurred 2 December 1994

The DDG 51 program will satisfy mission requirements.

c. (U) Changes Since As Of Date --

The FY 95 ship construction contract options were awarded on 4 January 1995. ISI was awarded two ships (DDGs 80 and 82) and BIW was awarded one ship (DDG 81).

DDG 51 Class construction has achieved production milestones since the as of date. The more significant are:

DDG 73 (DECATUR) started fabrication 8 January 1995

DDG 67 (COLE) launched 11 February 1995

DDG 66 (GONZALES) launched 18 February 1995

8. (U) Threshold Breaches:

There are breaches to the APB dated 18 March 94 for the following schedule milestones: Complete ESSM COEA, ESSM Milestone IV, ESSM IOC, Propulsion Engine P3I Initial Ship Installation, and Propulsion Engine P3I Engine Support Capability Date.

There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Complete Concept Design	N/A	DEC 80	DEC 80
DNSARC I	JUN 81	JUN 81	JUN 81
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

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9a. ~~DDG~~ Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
DDG 51 IOC	OCT 90	FEB 93	FEB 93
DDG 52 Delivery	N/A	MAY 92	OCT 92
DDG 53 Delivery	N/A	FEB 93	AUG 93
Milestone IV	N/A	APR 93	OCT 93
DDG 51 Flight IIA Contract Award	N/A	MAR 94	MAR 94
DDG 51 Flight IIA Delivery	N/A	SEP 99	SEP 99
DDG 51 Flight IIA IOC	N/A	OCT 00	OCT 00
Organic Support Available	N/A	JUL 91	JUL 91
Depot Support Available	N/A	JUL 91	JUL 91
SH-60B Hellfire IOC	N/A	DEC 97	DEC 97
Complete ESSM COEA	N/A	SEP 93	NOV 94 (Ch-1)
ESSM Milestone IV	N/A	OCT 93	NOV 94 (Ch-1)
(b)(1)			
Propulsion Engine P3I Initial ship installation	N/A	DEC 96	DEC 00 (Ch-2)
Propulsion Engine P3I Engine Support Capability Date	N/A	DEC 01	DEC 05 (Ch-2)

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.

The Flight IIA Milestone IV PRG/DAB review, originally scheduled for July 1993 and subsequently rescheduled to October 1993, was approved through an Acquisition Decision Memorandum (ADM) signed on 2 February 1994. Flight IIA contract award was contingent upon issuance of the ADM.

Complete ESSM COEA was adjusted due to the delayed receipt of the Advanced Medium Range Surface to Air Missile (AMRSAM) data to the Center for Naval Analysis (CNA) and difficulties related to modeling the NATO Sea Sparrow Missile System (NSSMS) ship configuration.

ESSM Milestone IV date was contingent upon staffing of the Operational Requirements Document (ORD) and completion of the ESSM COEA.

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9c. ~~(S)~~ Schedule (Cont'd):

c. (U) Current Change Explanations --

(b)(1)

ESSM COEA and Milestone IV were completed in November 1994 and reflect actual dates.

The FY 96/97 Biennial Budget Estimate introduces ESSM on the first AEGIS Destroyer in the FY 97 program, although earlier planning called for introduction on the last FY 96 ship, consistent with AEGIS Combat System Baseline 6, phase II introduction. Funding was not available to incorporate ESSM in FY 96. The program plans to push for ESSM introduction on the last FY 96 ship should funding become available. An Acquisition Program Baseline Change Request has been submitted to reflect the revised IOC Milestone date.

(CH-2)

	FROM	TO
Propulsion Engine P3I Initial Ship Installation	Dec 96	Dec 00
Propulsion Engine P3I Engine Support Capability Date	Dec 01	Dec 05

Propulsion Engine P3I Initial Ship Installation and Engine Support Capability Date have been rescheduled for introduction on the last ship in FY 00, due to budget constraints.

d. (U) References --

(U) Production Estimate:

DCP #1337 Rev 1, Change 1 of 22 August 1986.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
-----------------------	------------	---	--	--------------------------	-------------------------

SHIP:

Length (ft)	466	N/A	/ N/A	N/A	471
Beam (ft)	59	N/A	/ N/A	N/A	59
Navigational Draft (ft)	30.6	N/A	/ N/A	N/A	31.7
Displacement (long tons)	8300	N/A	/ N/A	N/A	9300
Propulsion LM (Gas Turbine)	2500	N/A	/ N/A	N/A	2500
Accommodations	341	N/A	/ N/A	N/A	380

MOBILITY:

Speed (knots)	30	30	/ 30	TBD	30
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(b)(1)

ANTI-AIR WARFARE:

Probability of Successful Engagement-ESSM	N/A	TBD	/ 0.75	TBD	0.75
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ANTI-SURFACE WARFARE:

Probability of Suc-

(b)(1)

Criteria

(u) for Number VLS Missiles	N/A	E96	E90	E96	E96 (1)
MINE WARFARE:					
Detection Range of Moored/Floating Mine (YDS)	N/A	1000	/ 800	TBD	800

(b)(1)

SURVIVABILITY/
VULNERABILITY:
Nuclear

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DDG 51 DESTROYER, December 31, 1994

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				
Anti-Submarine Warfare				
- ASW System	AN/SQQ-89	N/A / N/A	N/A	AN/SQQ-89(V)10
- ASROC	VLA	N/A / N/A	N/A	VLA
- Helo	SEAHAWK; LAMPS	2 / 2 EMBARKED HELOS	2 EMBARKED HELOS	2 EMBARKED HELOS
Anti-Air Warfare				
- Launchers	MK 41 VLS	N/A / N/A	N/A	MK 41 VLS
- Missiles	SM-2 MR	N/A / N/A	N/A	SM-2 MR
- Missile Fire Control System	3 MK 99	N/A / N/A	N/A	3 MK 99
- Guns	2 PHALANX	N/A / N/A	N/A	2 PHALANX
Anti-Surface/Strike Warfare				
- Guns	1 5"/54	N/A / N/A	N/A	1 5"/54
- Gunfire Control System	MK 160	N/A / N/A	N/A	MK 160
- Anti-Ship Cruise Missile	HARPOON	N/A / N/A	N/A	N/A
- Cruise Missile	TOMAHAWK	N/A / N/A	N/A	TOMAHAWK
Electronic Warfare	SLQ-32 SRBOC	N/A / N/A	N/A	SLQ-32 (V)3, SRBOC, Combat DF
Radars				
- Surface	SPS-67	N/A / N/A	N/A	SPS-67
- 3D	SPY-1D	N/A / N/A	N/A	SPY-1D

*/ General Note: Approved Program, Demonstrated Performance, and Current Estimate are for the Flight IIA configuration.

1/ There are three types of missiles (SM-2, TOMAHAWK, and VLA) which are shot from 96 tubes.

2/ DBSM reduction from conventionally constructed ships of similar

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

displacement, e.g. CG 47 Class ship.

3/ For structure and developmental systems.

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.

The FY 94 budget submission requested DDG 51 Flight IIA beginning with the last FY94 ship. Changes from the Flight II ships will 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.

A revised Acquisition Program Baseline (APB) was approved on 18 March 94 reflecting data for the Flight IIA program.

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

d. (U) References --

(U) Production Estimate:

DCP #1337 Rev 1, Change 1 of 22 August 1986.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	979.8	1905.8	2069.7
Procurement	15948.3	39092.2	39626.5
Basic Ship Costs	(5383.6)		(16997.8)
HME& and Combat Systems	(9427.9)		(20417.2)
Other Costs	(621.9)		(766.0)
OP/PD	(514.9)		(1445.5)
Total Sailaway	(15948.3)		(39626.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.6	25.5	25.5
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 87 Base-Year \$	16953.7	41023.5	41721.7

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

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	3163.8	15776.4	16821.8
Development (RDT&E)	(-63.2)	(335.4)	(411.5)
Procurement	(3224.8)	(15438.7)	(16408.0)
Construction (MILCON)	(2.2)	(2.3)	(2.3)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	20117.5	56799.9	58543.5

The Milestone IIIA (Oct 86) production decision planned for 5 ships per year. The Approved Program and Current Estimates provide for 2.7 ships per year within the FYDP in accordance with Program Decision Memorandum (PDM-752).

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>23</u>	<u>57</u>	<u>57</u>
Total	23	57	57

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:

DCP #1337 Rev 1, Change 1 of 22 August 1986.

(U) Approved Program:

DAB Approved Acquisition Program Baseline dated March 18, 1994.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (MAR 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY87\$)	41721.7	41023.5	
(2) Quantity	57	57	
(3) Unit Cost	731.96	719.71	1.70

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY87\$)	39626.5	39092.2	
(2) Quantity	57	57	
(3) Unit Cost	695.20	685.83	1.37

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13. (U) Cost Variance Analysis:**a. (U) Summary (Current (Then-Year) Dollars in Millions)**

	RD&E	PROC	MILCON	TOTAL
Production Estimate	916.6	19173.1	27.8	20117.5
Previous Changes:				
Economic	+5.3	-1614.0	+0.2	-1608.5
Quantity	-	+31714.7	-	+31714.7
Schedule	-	+949.4	-	+949.4
Engineering	-	+1440.6	-	+1440.6
Estimating	+1319.3	+2867.1	-	+4186.4
Other	-	-	-	-
Support	-	-	-0.2	-0.2
Subtotal	+1324.6	+35357.8	-	+36682.4
Current Changes:				
Economic	-5.6	43.1	-	+37.5
Quantity	-	-	-	-
Schedule	-	311.7	-	+311.7
Engineering	-	525.1	-	+525.1
Estimating	245.6	623.7	-	+869.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+240.0	+1503.6	-	+1743.6
Total Changes	+1564.6	+36861.4	-	+38426.0
Current Estimate	2481.2	56034.5	27.8	58543.5

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

a. (U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)				
	RD&E	PROC	MILCON	TOTAL
Production Estimate	979.8	15948.3	25.6	16953.7
Previous Changes:				
Quantity	-	+21363.6	-	+21363.6
Schedule	-	-	-	-
Engineering	-	+958.8	-	+958.8
Estimating	+926.0	+821.5	-	+1747.5
Other	-	-	-	-
Support	-	-	-0.1	-0.1
Subtotal	+926.0	+23143.9	-0.1	+24069.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	334.4	-	+334.4
Estimating	163.9	199.9	-	+363.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+163.9	+534.3	-	+698.2
Total Changes	+1089.9	+23678.2	-0.1	+24768.0
Current Estimate	2069.7	39626.5	25.5	41721.7

b. (U) Previous Change Explanations --

RD&E

Economic: Revised escalation indices

Estimating: Revised program funding requirements

Procurement

Economic: Revised escalation indices

Quantity: Addition of 34 ships (FY 1993-2004)

Schedule: Change in acquisition profile (FY 1987-FY 2001)

Engineering: Flight II introduced in FY 92 and Flight IIA introduced on the last ship in FY 94.

Estimating: Revised procurement estimates for ship construction and ship systems including the impact of acquisition strategy revisions, GFE savings,

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

revised outfitting and post delivery requirements
due to schedule and quantity changes, current and
prior year revisions due to cost adjustments for
escalation and estimating.

MILCON

Economic: Revised escalation indices
Support: Revised program funding requirements

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDTE

Revised December 1994 economic escalation rates (Economic)	N/A	-5.6
Revised program funding estimates (Estimating)	+163.9	+245.6
 RDTE Subtotal	 +163.9	 +240.0

(2) Procurement

Revised December 1994 economic escalation rates (Economic)	N/A	+43.1
Change in the acquisition schedule of last 25 ships of the 57 ship profile previously submitted (Schedule)	N/A	+311.7
Revised ship construction and GFE cost estimates (FY 96-04) (Estimating)	+175.3	+596.3
Revisions to current (FY 95) and prior year (FY 85-94) program due to (BY 87\$) cost adjustments for escalation and estimating (Estimating)	+24.6	+27.4
ESSM introduction and removal of Phalanx system in FY 97-04. . (Engineering)	-96.0	-150.9
Intercooled Recuperative Gas Turbine (ICR) incorporated on the last 10 ships starting on the last ship in FY00. (Engineering)	+153.9	+249.3
Changes to shipbuilding and GFE to incorporate Warfighting Upgrades (FY 96-04) (Engineering)	+276.5	+426.7
 Procurement Subtotal	 +534.3	 +1503.6

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

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

PAUC (Dev 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 SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
874.7	-27.56	34.66	22.13	34.49	88.70	--	--	152.42	1027.1

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

a. (U) Procurement --

(U) DDG 59,61,63,65,67 CONST:
INGALLS SHIPBUILDING, INC., PASCAGOULA, MS
N00024-90-C-2800, FPI
Award: February 22, 1990
Definitized: January 16, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$1200.3	\$1376.9	5

Current Contract Price		
Target	Ceiling	Qty
\$1270.8	\$1463.1	5

Estimated Price At Completion	
Contractor	Program Manager
\$1316.1	\$1368.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$17.5	\$-56.4
Cumulative Variances To Date (12/31/94)	\$40.7	\$-75.7
Net Change	\$23.2	\$-19.3

Explanation of Change:

Cost and schedule variances are driven by material.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$269.4M).

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

(U) DDG 60.62.64.66 CONSTRUCC:			Initial Contract Price			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BATH IRON WORKS, BATH, ME						
N00024-90-C-2801, FPI	\$1117.8	\$1293.8	4			
Award: February 22, 1990						
Definitized: January 16, 1991						

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1128.1	\$1313.2	4	\$1183.4	\$1194.7	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-33.7	\$-15.7
Cumulative Variances To Date (12/31/94)	\$-43.6	\$-8.2
Net Change	\$-9.9	\$7.5

Explanation of Change:

Cost and schedule variances are due to labor and overhead performance.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$143.2M).

(U) DDG 68.70.72 CONSTRUCTIO:			Initial Contract Price			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BATH IRON WORKS, BATH, ME						
N00024-92-C-2805, FPI	\$784.3	\$904.6	3			
Award: April 8, 1992						
Definitized: April 8, 1992						

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$813.5	\$937.1	3	\$879.6	\$894.0	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.9	\$35.0
Cumulative Variances To Date (12/31/94)	\$-2.9	\$6.7
Net Change	\$-5.8	\$-28.3

Explanation of Change:

Cost and schedule variances are driven by material.

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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, nor escalation compensation commitments (\$168.7M).

(U) DDG 73.75,76 CONSTRUCTIO:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
BATH IRON WORKS, BATH, ME				
N00024-93-C-2800, FPI	\$777.0	\$865.8	3	
Award: January 19, 1993				
Definitized: January 19, 1993				
Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$779.0	\$868.6	3	\$862.2	\$867.8
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$9.9	\$43.4
Cumulative Variances To Date (12/31/94)			\$-1.6	\$45.2
Net Change			\$-11.5	\$1.8

Explanation of Change:

Cost and schedule variances are driven by material.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$188.5M).

(U) DDG 77.79,81 CONSTRUCTIO:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
BATH IRON WORKS, BATH, ME				
N00024-94-C-2808, FPI	\$964.5	\$1077.2	3	
Award: July 20, 1994				
Definitized: January 4, 1995				
Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$964.5	\$1077.2	3	\$0.0	\$1001.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
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.

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

Contractor's Estimated Price at Completion is not available as Cost Performance Reports are not yet required for this contract.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future change estimates, nor escalation compensation commitments (\$225.8M).

(U) <u>DDG 78,80,82 CONSTRUCTION:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
INGALLS SHIPBUILDING, INC., PASCAGOULA, MS			
N00024-94-C-2800, FPI	\$993.8	\$1107.5	3
Award: July 20, 1994			
Definitized: January 4, 1995			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$993.8	\$1107.5	3	\$0.0	\$1031.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
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.

Contractor's Estimated Price at Completion is not available as Cost Performance Reports are not yet required for this contract.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future change estimates, nor escalation compensation commitments (\$230.3M).

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

a. (U) Program Status --

- (1) Percent Program Completed: 53.3% (16 yrs/30 yrs)
- (2) Percent Program Cost Appropriated: 47.7% (\$27905.4 / \$58543.5)

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2009)</u>	<u>Total</u>
RD&E	1418.1	105.6	98.4	859.1	2481.2
Procurement	26459.5	2319.9	2978.4	24276.7	56034.5
MILCON	27.8	-	-	-	27.8
O&M	-	-	-	-	-
Total	27905.4	2425.5	3076.8	25135.8	58543.5

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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	92.5	2.8
1987				100.4	100.4	100.4	100.2	2.7
1988				90.7	93.4	93.4	93.4	3.0

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

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Excl 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	41.2	39.2	4.0
1991				73.9	87.5	87.5	87.5	4.3
1992				71.5	87.2	86.2	79.1	2.8
1993				88.6	110.6	101.7	85.3	2.7
1994				80.3	102.7	90.8	49.2	2.0
1995				69.1	90.9	44.8	1.1	2.7
1996				78.0	105.6			3.0
1997				70.5	98.4			3.0
1998				66.2	95.1			3.0
1999				77.5	114.7			3.0
2000				72.0	109.7			3.0
2001				65.6	103.0			3.0
2002				54.0	87.3			3.0
2003				54.0	89.9			3.0
2004				54.0	92.6			3.0
2005				40.7	71.9			3.0
2006				28.7	52.3			3.0

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

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2007				15.5	29.0			3.0
2008				7.0	13.6			3.0
Subtot				2069.7	2481.2	1349.8	1237.8	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1984					78.5	78.5	77.7	3.6
1985	1	307.6	892.8	1171.6	1139.5	1135.7	1116.1	2.1
1986					98.1	97.5	96.9	1.4
1987	3	143.6	2192.7	2256.0	2485.7	2474.7	2362.5	1.5
1988				3.9	9.5	9.5	9.5	2.6
1989	4		2602.3	2506.8	2909.1	2829.4	2591.3	3.3
1990	5	11.2	3143.8	3035.3	3648.6	3480.1	3048.9	1.1
1991	4	2.9	2611.1	2537.2	3176.2	2843.6	2180.4	1.6
1992	5	29.5	3194.2	3116.7	4049.7	3342.2	1958.5	2.5
1993	4	6.1	2565.3	2578.9	3378.3	2468.5	814.1	3.2
1994	3	64.2	1982.3	2061.0	2744.1	1778.3	157.4	4.1
1995	3	9.2	1926.1	1935.1	2742.2	1366.5		2.7
1996	2	23.8	1575.6	1667.2	2319.9			3.0

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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)

1997	3	32.2	1976.0	2025.1	2978.4			3.0
1998	2	60.0	1570.1	1669.1	2497.4			3.0
1999	3		2104.6	2101.6	3278.8			3.0
2000	3	27.7	2065.3	2077.2	3298.4			3.0
2001	3	3.5	2085.5	2111.9	3481.6			3.0
2002	4		2613.1	2638.0	4450.7			3.0
2003	2		1636.2	1659.6	2863.3			3.0
2004	3		2168.0	2164.0	3865.3			3.0
2005				74.1	122.6			3.0
2006				73.8	125.7			3.0
2007				68.1	119.6			3.0
2008				45.7	82.7			3.0
2009				48.6	90.6			3.0
Subtot	57	721.5	38905.0	39626.5	56034.5	21904.5	14413.3	

FY 84 and FY 86 Then Year figures are for advanced procurement for FY 85 and FY 87, respectively. The associated Base Year amounts are reflected in the year of the end item procurement.

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DDG 51 DESTROYER, December 31, 1994

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	Ex- pended	

Appropriation: 1205 Military Construction, Navy

1986				4.5	4.6	4.6	4.6	2.8
1988				13.5	14.7	14.7	14.7	3.0
1989				7.5	8.5	8.5	8.5	4.2
Subtot				25.5	27.8	27.8	27.8	
Grand Total	57	721.5	38905.0	41721.7	58543.5	23282.1	15678.9	

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.

b. (U) Cost and Quantity Variances --

At least six quantities must be produced in any one fiscal year.

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

	<u>To Date</u>
RD&E	0/0
Procurement	8/8

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

18. (U) Operating and Support Costs:

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DDG 51 DESTROYER, December 31, 1994

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

a. (U) Assumptions and Ground Rules --

The O&S estimate projects costs in FY94 then year dollars for a 57 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 class 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 5020 hours annually. The average annual cost per ship for Operating and Support costs, over the 40 year projected service life, is estimated at \$38.7M in FY87 dollars.

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	10.2	N/A
Purchased Services	0.4	N/A
Direct Depot Maint.	8.6	N/A
Direct Recurring Invest.	8.5	N/A
Indirect Costs	0.8	N/A
ARGIS Other Depot	0.4	N/A
Total	38.7	N/A

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	36.2	19.1	19.8	---	75.1
Industrial Fund	---	---	---	---	---
Total	36.2	19.1	19.8	---	75.1

The Contractor Support Costs are combined costs for both the CG 47
AEGIS Class Cruiser and the DDG 51 Destroyer programs.

The FY 1995 & Prior column reflects FY 1994 and FY 1995 only.

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AF/5 KC-135R

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

PROGRAM: KC-135R Reengine

AS OF DATE: December 31, 1994

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FOR OPEN PUBLICATION

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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 Ms JOAN COLE
Program Management Section Assigned: April 1, 1990
C/KC-135 System Prog Office Division AV 336-7259 COMM (405) 736-7259
Oklahoma City, OK 73145-3019

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

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)

5. Related Programs:

None.

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.

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6. Mission and Description (Cont'd):

The reengineed 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 to a total of 365 aircraft. KC-135R operating bases increased by five for a total of 26 (15 active Air Force bases, nine Air National Guard bases and two Air Force Reserve base). Modification kit procurement increased by six for a total of 406. The KC-135A/Q/E reengine program has been increased from 400 to 406 aircraft.

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KC-135R Reengine, December 31, 1994

7b. Program Highlights (Cont'd):

The KC-135R is expected to satisfy all mission requirements.

This will be the final SAR, since the program is more than 90 percent expended and delivered.

Nunn-McCurdy unit cost reporting is not applicable beyond the as of date of the current submission.

c. Changes Since As Of Date --

Two (2) KC-135R aircraft were delivered in Jan 95. A total of 367 aircraft have been delivered.

8. Threshold Breaches:

There are currently no Air Force Acquisition Executive (AFAE) approved Acquisition Program Baseline (APB) (dated 27 Nov 89) or Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	APR 97 (Ch-1)

b. Previous Change Explanations --

Change in Full Operational Capability (FOC) (last aircraft delivery) from to Nov 95 to Jul 96 was due to schedule stretchout as a result of an increase in total quantity.

c. Current Change Explanations --

(Ch-1) FOC (last aircraft delivery) changed from Jul 96 to Apr 97 due to an increase in total quantity.

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KC-135R Reengine, December 31, 1994

9d. Schedule (Cont'd):

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 November 27, 1989.

10. Performance Characteristics:

a. Performance --

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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	N/A	F108-	/ F108-	F108-	F108-
Engine and		CF100	CF100	CF100	CF100
Multipurpose Trailer					
Fuel Load at Max	203300	203300	/ 203300	203300	203300
Takeoff Gross Weight					
(lbs)					
Maximum Gross Weight	322500	322500	/ 322500	322500	322500
(lbs)					
Cruise Speed (Mach)	N/A	.77	/ .77	.77	.77
Critical Field Length	11000	10400	/ 10400	10400	10400
(ft)					
Payload/Radius (2000	114000	114000	/ 114000	114000	114000
nm radius/lbs)					
Engine Replacement (#	N/A	3	/ 3	3	3
of men in 2 clock					
hrs)					
Constant Speed Drive	N/A	5	/ 5	5	5
Accessibility for					
Inspection (1 man in					
# of min)					
Fuel Efficiency (% more than J57)	N/A	27	/ 27	27	27
Aircraft/Engine	N/A	Quick	/ Quick	Quick	Quick
Interfaces		Discon-	Discon-	Discon-	Discon-
		nect	nect	nect	nect

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KC-135R Reengine, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Basic Structure (Engine)	N/A	All inter-change-able	/ All inter-change-able	All inter-change-able	All inter-change-able
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
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, Acquisition Program Baseline update.

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10c. Performance Characteristics (Cont'd):

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:

AFAP Approved Acquisition Program Baseline dated November 27, 1989.

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

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	91.6	89.7	89.7
Procurement	4941.5	7352.4	4596.3
Airframe	(2033.0)		(1649.8)
Engine	(2348.0)		(2468.3)
Installation			(91.1)
Total Flyaway	(4381.0)		(4209.2)
Other Wpn Sys Costs	(208.0)		(172.4)
O&M FY91 and Out	(0.0)		(0.0)
Total Other Wpn Sys	(208.0)		(172.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(352.5)		(214.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>196.0</u>	<u>0.0</u>	<u>93.2</u>
Total FY 81 Base-Year \$	5229.1	7442.1	4779.2
Escalation	2600.1	4771.1	2505.9
Development (RDT&E)	(5.6)	(5.0)	(5.0)
Procurement	(2515.2)	(4766.1)	(2472.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(79.3)</u>	<u>(0.0)</u>	<u>(28.9)</u>
Total Then-Year \$	7829.2	12213.2	7285.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>334</u>	<u>636</u>	<u>406</u>
Total	334	636	406

There are no non-fully configured end items for the KC-135R modification.

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

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 November 27, 1989.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (NOV 89 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY81\$)	4779.2	7442.1	
(2) Quantity	406	636	
(3) Unit Cost	11.771	11.701	0.598
b. Procurement			
(1) Cost (BY81\$)	4596.3	7352.4	
(2) Quantity	406	636	
(3) Unit Cost	11.321	11.560	-2.071

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KC-135R Reengine, December 31, 1994

13. Cost Variance Analysis:

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

	RD&E	PROC	O&M	TOTAL
Production Estimate	97.2	7456.7	275.3	7829.2
Previous Changes:				
Economic	-0.2	+54.1	+55.5	+109.4
Quantity	-	-194.2	+181.4	-12.8
Schedule	-	+910.9	+3.2	+914.1
Engineering	-	-	-	-
Estimating	-2.3	-1041.2	-393.3	-1436.8
Other	-	-	-	-
Support	-	-229.6	-	-229.6
Subtotal	-2.5	-500.0	-153.2	-655.7
Current Changes:				
Economic	-	-0.9	-	-0.9
Quantity	-	128.3	-	+128.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-3.7	-	-3.7
Other	-	-	-	-
Support	-	-12.1	-	-12.1
Subtotal	-	+111.6	-	+111.6
Total Changes	-2.5	-388.4	-153.2	-544.1
Current Estimate	94.7	7068.3	122.1	7285.1

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KC-135R Reengine, December 31, 1994

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

a. Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	O&M	TOTAL
Production Estimate	91.6	4941.5	196.0	5229.1
Previous Changes:				
Quantity	-	+367.7	+105.0	+472.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.9	-607.0	-207.8	-816.7
Other	-	-	-	-
Support	-	-166.6	-	-166.6
Subtotal	-1.9	-405.9	-102.8	-510.6
Current Changes:				
Quantity	-	69.6	-	+69.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-2.1	-	-2.1
Other	-	-	-	-
Support	-	-6.8	-	-6.8
Subtotal	-	+60.7	-	+60.7
Total Changes	-1.9	-345.2	-102.8	-449.9
Current Estimate	89.7	4596.3	93.2	4779.2

b. Previous Change Explanations --

RD&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

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KC-135R Reengine, December 31, 1994

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; quantity decrease of 7 KC-135A aircraft, total program decreased from 397 to 390; quantity increase of 10 KC-135E aircraft.

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; recategorization of engine production support from flyaway estimating to support, increase in hardware costs due to re-engining of KC-135E; recategorization of FY91 and out O&M funds to 3010 Procurement; increase in hardware estimate based on low quantity in last production year; addition of FY90 and prior kits installation funded under the FY92 omnibus reprogramming.

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, decrease in initial spares and other support associated with

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

decrease in total program.

O & M

Economic: Revised economic escalation indices.

Quantity: Increased costs associated with the quantity increase from 334 to 392; reduction associated with the quantity decrease from 392 to 389; increase 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; recategorization 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

(2) Procurement

Revised escalation indices. (Economic)	N/A	-0.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.1
Quantity Variance resulting from increase of 6 units. (Quantity)	+69.6	+128.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.7	+1.0
Decrease in hardware estimate due to quantity increase of 6 units. (Estimating)	-2.8	-4.7

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KC-135R Reengine, December 31, 1994

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Support)	-0.1	-0.3
Increase in Initial Spares associated with increase of six aircraft (Support)	+0.1	+0.2
Decrease in data, production support and support equipment due to refinement of estimates and definitisation of contracts. (Support)	-6.8	-12.0
Procurement Subtotal	+60.7	+111.6

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
23.441	0.267	-3.872	2.251	--	-3.548	--	-0.595	-5.497	17.944

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

a. Procurement --

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>FY90/91/92 ENGINE BUY:</u>			
CFM INTERNATIONAL, CINCINNATI, OH			
F33657-89-C-2140, FFP	\$436.4	N/A	146
Award: July 17, 1992			
Definitized: July 17, 1992			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$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 final time this contract will be reported in the SAR.

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15. Contract Information (Cont'd):

<u>FY90/91/92 AIRFRAME KIT:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
THE BOEING COMPANY, WICHITA, KS				
F34601-92-C-1155, FFP	\$156.2	N/A	34	
Award: September 25, 1992				
Definitized: September 25, 1992				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$156.4	N/A	34	\$156.4	\$156.4

Explanation of Change:

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

Current contract target price changed from 156.2 to 156.4 due to an engineering change proposal.

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

<u>FY93 ENGINES BUY:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
CFM INTERNATIONAL, CINCINNATI, OH				
F33657-89-C-2140, FFP	\$196.2	N/A	62	
Award: May 25, 1993				
Definitized: May 25, 1993				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$196.2	N/A	62	\$196.2	\$196.2

Explanation of Change:

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

<u>FY93 AIRFRAME KIT:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
THE BOEING COMPANY, WICHITA, KS				
F34601-94-C-0067, FFP	\$74.2	N/A	14	
Award: January 11, 1994				
Definitized: January 11, 1994				

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KC-135R Reengine, December 31, 1994

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$75.0	N/A	14	\$75.0	\$75.0

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.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>FY93/94 ENGINE BUY:</u> CFM INTERNATIONAL, CINCINNATI, OH F34601-94-D-0976, FFP Award: November 30, 1994 Definitized: November 30, 1994	\$80.3	N/A	24

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$80.3	N/A	24	\$80.3	\$80.3

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.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>FY93/94 AIRFRAME KIT BUY:</u> THE BOEING CO, WICHITA, KS F34601-95-C-0120, FFP Award: January 9, 1995 Definitized: January 9, 1995	\$34.5	N/A	6

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$34.5	N/A	6	\$34.5	\$34.5

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.

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KC-135R Reengine, December 31, 1994

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

a. Program Status --

- (1) Percent Program Completed: 82.6% (19 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$7283.2 / \$7285.1)

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

<u>Appropriation</u>	<u>Prior Years (FY77-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-99)</u>	<u>Total</u>
RDT&E	94.7	-	-	-	94.7
Procurement	7066.4	0.1	1.6	0.2	7068.3
MILCON	-	-	-	-	-
O&M	122.1	-	-	-	122.1
Total	7283.2	0.1	1.6	0.2	7285.1

O&M included in 3010 procurement from FY91 to end of program.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Excl 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

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KC-135R Reengine, December 31, 1994

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: 3600 Research, Development, Test + Eval, AF (Cont'd)

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
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	751.9	2.7
1988	50	0.3	447.3	449.7	713.2	713.2	694.9	3.1
1989	49		449.1	454.9	745.1	740.2	735.6	4.0
1990	32	0.4	362.8	368.8	623.3	623.3	609.9	4.0
1991	31	2.8	333.2	346.6	609.6	609.6	587.6	4.3

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KC-135R Reengine, December 31, 1994

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)

1992	26		280.1	311.5	561.1	525.3	406.3	2.8
1993	19	2.7	218.9	235.6	432.6	261.3	5.7	2.7
1994	1		11.9	13.7	25.8			2.0
1995				0.1	0.1			2.7
1996				0.1	0.1			3.0
1997				0.8	1.6			3.0
1998				0.0	0.1			3.0
1999				0.0	0.1			3.0
Subtot	406	110.2	4099.0	4596.3	7068.3	6828.5	6387.5	

Obligations/Expenditures are from Accounting/Finance records, as of
31 Dec 94.

Appropriation: 3400 Operation & Maintenance, Air Force

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
1986				16.8	21.6	21.6	21.6	2.9

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KC-135R Reengine, December 31, 1994

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: 3400 Operation & Maintenance, Air Force (Cont'd)

1987				15.9	21.2	21.2	21.2	2.7
1988				16.0	22.0	22.0	22.0	3.1
1989				15.5	22.1	22.1	21.5	4.2
Subtot				93.2	122.1	122.1	121.5	
Grand Total	406	110.2	4099.0	4779.2	7285.1	7043.0	6594.3	

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

	<u>To Date</u>
RDT&E	0/0
Procurement	367/367

The number of procurement deliveries applies to the modification kits.

b. 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 primary aircraft authorized (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:

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KC-135R Reengine, December 31, 1994

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

(The KC-135A is the KC-135R antecedent system.)

The following O&S costs for the KC-135A are based on a typical 16 primary aircraft authorized (PAA) squadron using 354 flying hours per PAA. Manpower consists of 76 officers, 292 enlisted and 13 civilians. Logistics factors are taken 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 ANTECEDENT (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

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KC-135R Reengine, December 31, 1994

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M (AF)	46.5	---	---	---	46.5
Industrial Fund	180.6	---	---	---	180.6
Total	227.1	---	---	---	227.1

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PROGRAM: AMRAAM (ADM-120)

AS OF DATE: December 31, 1994

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AS REQUIRED

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SECTION 552, FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Preferred Name):
AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)

2. (U) DoD Component: USAF

Joint Participants:
USAF/USN

3. (U) Responsible Office and Telephone Number:

System Program Director	COL RICHARD L. DICKSON
Air-to-Air Joint Systems Program	Assigned: September 20, 1993
Office (ASC/YA)	AV 872-3531 COMM (904) 882-3531
EGLIN AFB, FL 32542-6844	

Navy Program Director	MARKAM F. STENGER
Air-to-Air Joint Systems Program	Assigned: June 12, 1994
Office (ASC/YA)	AV 872-2412 COMM (904) 882-2412
EGLIN AFB, FL 32542-6844	

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AMRAAM (AIM-120), December 31, 1994

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

RDTE&E:

PE 0603316F, 0603370F
PE 0603370N Project W0981
PE 0604314F
PE 0604314N (Shared) Project E0981
PE 0207163F
PE 0207163N (Shared) Project E0981

PROCUREMENT:

APPN 1507 ICN 2206 (Navy) PE0204162N
APPN 1507 ICN 2206 (Navy) PE0206138M
APPN 3020 ICN MAMRAO (Air Force) PE0207163F

5. (U) Related Programs:

F-14, F-15, F-16, F-22, F/A-18, SEEK EAGLE, North Atlantic Treaty Organization (NATO) Aircraft (United Kingdom Sea Harrier and German F-4F), Swedish Gripen, NATO European Fighter Management Agency (NEFMA)

6. (U) Mission and Description:

The AMRAAM program provides for the acquisition of the most advanced all-weather, all-environment medium range air-to-air missile system in response to USAF, USN, and NATO operational requirements for the 1989-2007 time period. The system is an active radar guided intercept missile with inherent Electronic Countermeasures (ECM) 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 Defense Systems Acquisition Review Council (DSARC) Milestone I validated the requirement for AMRAAM. In December 1981 the Full-Scale Development (FSD) contract was competitively awarded to Hughes Aircraft Company (Hughes). In July 1982 Raytheon Company (Raytheon) was selected as the follower contractor for competitive production of AMRAAM. In September 1982 DSARC Milestone II authorized FSD. In January 1989 Hughes completed flight testing and Raytheon completed second-source qualification testing. The live fire test program successfully ended in August 1989. The Defense Advisory Board (DAB) approved a revised production estimate of \$9.3B (FY84\$). This increase from the original cost cap of \$7.0B breached the Nunn-McCurdy thresholds. On April 13, 1990 the USD(A) certified the program to Congress. In May 1990 four AMRAAM, fired in less than 30 seconds from a single F-15 against four separate targets (4V4) protected by chaff and ECM jamming, killed their targets. The Missile Rail Launcher (MRL) achieved initial operational capability (IOC) in May 1990 and deployed to Operation Desert Storm. The first F-15 operational squadron was fully equipped with missiles in early

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AMRAAM (AIM-120), December 31, 1994

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

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 XIII), resulting in a second Nunn-McCurdy unit cost breach. The USD(A) certified the program again to Congress on May 3, 1991. In March 1991 Hughes, with Raytheon as the primary subcontractor, garnered the preplanned product improvement (P3I) Phase 1 contract. On February 9, 1991 AMRAAM deployed to Saudi Arabia to support Operation Desert Storm. Although not fired, the missile achieved a mean time between maintenance (MTBM) of 1,300 hours.

On May 23, 1991 the DAB Milestone IIIB authorized the program to continue low rate production through FY92 (Lot VI). AMRAAM IOC on the F-15 occurred September 25, 1991. On January 13, 1992 the first F-16 unit established full operational capability (FOC). A follow-up DAB Program Review, held April 23, 1992, approved full rate production for the FY93 procurement.

In support of the United Nations' mandated "no fly" zones in Iraq, an AMRAAM downed an Iraqi Air Force MIG under combat conditions in December 1992 and another in January 1993. The Lot VII contracts, awarded to Hughes Missile System Corporation (HMSC) and Raytheon in February 1993, saw a unit cost decrease of 25 percent. The FY94 Amended President's Budget reduced the procurement objective from 15,450 to 13,038 and stretched the program three years from FY99 to FY02 (Lot XVI). The AF Follow-on Operational Test and Evaluation (FOT&E) Phase 1 program completed in April 1993 and the Navy declared IOC in September 1993.

b. (U) Significant Developments Since Last Report --

On January 4, 1994 the Lot VIII missile contracts, awarded to HMSC and Raytheon, reflected a unit cost decrease of 23 percent, allowing the purchase of 289 additional missiles. The FY95 President's Budget again stretched the program three years from FY02 to FY05, but retained a procurement objective of 13,038 missiles. Hughes Missile Electronics Inc. completed its MRL contract in February 1994, delivering 1,626 launchers over three lots and 27 months. The Navy Operational Evaluation (OPEVAL) completed successfully in March 1994.

On February 28, 1994, an AMRAAM shot down an aircraft in a combat situation in Bosnia. On April 8, 1994 United Telecontrol Electronics (UTE), a producer of the MRL, filed for bankruptcy protection under Chapter 11 provisions. On June 16, 1994 Marvin Engineering Company won the Lot VII MRL contract, with options for Lots VIII and IX. HMSC received the P3I Phase 2 contract on June 30, 1994. On December 16, 1994, HMSC obtained the MRL contract to reprocore 1,413 MRL undelivered by UTE.

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AMRAAM (AIM-120), December 31, 1994

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

AMRAAM satisfies all current mission requirements.

c. (U) Changes Since As Of Date --

The AMRAAM procurement objective decreased from 13,038 to 12,018 and the program was stretched two years from FY05 to FY07 (Lot XII).

8. (U) Threshold Breaches:

There are no breaches to the approved DAE Acquisition Program Baseline (APB) dated March 18, 1994, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	N/A	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	JUN 90	JUN 90	JUN 90
Reliability Program w/Lot 1 Assets (Air Force)			
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	JAN 94	MAR 94
Complete AF FOT&E Phase I	MAR 92	FEB 93	APR 93
P3I Phase 1 CDR Complete	OCT 92	OCT 92	JAN 93
Initial Operational Capability (IOC) (Navy)	SEP 92	SEP 93	SEP 93
Joint Depot Activated	SEP 94	FEB 98	FEB 98
P3I Phase 1 Flight Test Completed	DEC 94	DEC 94	APR 95 (Ch-1)

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AMRAAM (AIM-120), December 31, 1994

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

(U) Milestones (Cont'd) --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Last Delivery	SEP 01	N/A	NOV 09 (Ch-2)

b. (U) Previous Change Explanations --

AF 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. FOC occurred in January 1992, two months early due to changes in the deployment schedule. Navy OPEVAL slipped from March 1992 to December 1992 and then to August 1993 because of problems with the F/A-18 radar tape. Navy OPEVAL slipped again from August 1993 to March 1994 because of test failures at Point Mugu Test Center, CA and Holloman AFB, NM. AF FOT&E Phase I slipped from March 1992 to February 1993 due to launcher design changes. AF FOT&E slipped from February 1993 to April 1993 because of higher priority test requirements. An administrative change slipped P3I Phase 1 CDR from October 1992 to November 1992 and slipped again to January 1993 because of software design problems. Navy IOC slipped from September 1992 to December 1992 due to launcher design changes. Navy IOC was declared in September 1993 rather than December 1992 because of its dependency upon Navy OPEVAL. 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. An administrative change moved depot activation from January 1998 to February 1998. The FY94 President's Budget stretched the program three years. The FY95 President's Budget stretched the program an additional three years. This resulted in the last delivery milestone moving from September 2001 to September 2004 and then to November 2007. Last delivery milestone was deleted from the APB in the September 13, 1993 APB and the current estimate is presented for information.

c. (U) Current Change Explanations --

(Ch-1) - P3I Phase 1 Final Flight test completion date slipped from December 1994 to April 1995 due to drone failures and higher priorities in delivering AIM-120B software.

(Ch-2) - Current estimate for last delivery was changed from November 2007 to November 2009 due to a two year schedule stretch.

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AMRAAM (AIM-120), December 31, 1994

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

d. (U) References --

(U) Production Estimate:

DAE Approved Acquisition Program Baseline dated January 17, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------------------	------------	---	------------------------------------	-----------------------------

(b)(1)

Reliability

Ready Storage (hrs) (mature msl - 90K operational flight hours)	60000	60000	/ 45000	N/A	45000	
Availability (%)	86	86	/ 82	N/A	96	(Ch-1)
Captive-Carry (MTBM- Type I) (hrs)	600	600	/ 450	282	750	(Ch-2)
On Alert Storage MTBM	30000	30000	/ 22500	N/A	30000	
Aircraft Configure/ Load - 3 Man Load Crew						
Install 4 Rail Launchers (mins)	20	20	/ 25	21	21	
Load 4 Missiles from trailer (mins)	15	15	/ 20	18	18	
Load 4 Missiles from container (mins)	20	20	/ 30	22	22	
Missile checks (mins)	1	1	/ 5	1	1	

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AMRAAM (AIM-120), December 31, 1994

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
All Weather Capability	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	/ Day, Night, Rain, Clouds	Day, Night, Rain, Clouds
(b)(1)				
Aircraft Compatibility	F-15, F-16, F-14, F/A-18	F15, 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
All-Up Round	Control Surfaces field instal- led	Control Surfaces field in- stalled	/ Control Surfaces field in- stalled	Control Surfaces field in- stalled

(b)(1)

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AMRAAM (AIM-120), December 31, 1994

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

	<u>Approved</u> <u>Program</u>	<u>Demon-</u> <u>strated</u>	<u>Current</u>
<u>PdE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>
Target			
Discrimination			
(cluster target):			
Attack Multiple			
Targets which are			
unresolved by			
friendly fighter			
A/C radars			

(b)(1)

Demonstrated captive carry Mean Time Between Maintenance (MTBM) hours in Production Reliability Acceptance Test (PRAT).

F-Pole - The distance between the shooter and the target when the missile intercepts the target.

A-Pole - The distance between the shooter and the target when the missile goes active.

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 --

(Ch-1) Availability or operational reliability increased from 93% to 96% because of increases in MTBM.

(Ch-2) Captive Carry Reliability measured in recent ACC-conducted tests exceeded 2255 hrs MTBM on the F-16 and exceeded 1333 MTBM on the F-15. Production reliability exceeds 750 hrs MTBM for both Hughes and Raytheon.

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AMRAAM (AIM-120), December 31, 1994

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

d. (U) References --

(U) Production Estimate:

DAE Approved Acquisition Program Baseline dated January 17, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	1725.7	2097.2	2146.0
Procurement	10552.5	10205.7	9420.1
Flyaway	(10038.5)		(8891.3)
Other Weapon Cost	(378.0)		(0.0)
Peculiar Support	(0.0)		(390.0)
Initial Spares	(136.0)		(138.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	12278.2	12302.9	11566.1
 Escalation	834.2	1025.0	1005.5
Development (RDT&E)	(-375.1)	(-275.7)	(-239.5)
Procurement	(1209.3)	(1300.7)	(1245.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	13112.4	13327.9	12571.6

Note: Other Weapon Cost has been recategorized as Peculiar Support to track to the program office estimate.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>15450</u>	<u>13038</u>	<u>12018</u>
Total	15450	13038	12018

Excludes 169 non-fully configured RDT&E missiles in the development estimate, and 111 in the current estimate.

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

(U) TURKEY (TK-D-YDO) Case signed May 1991

\$59.1M PURPOSE: 96 AMRAAMs (Lots VII,VIII), 96 Missile Rail Launchers (MRLs) and associated equipment

(U) SOUTH KOREA (KS-D-YGL) Case signed October 1991

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AMRAAM (AIM-120), December 31, 1994

11c. (b)(1)

- (U) NATO EUROPEAN FIGHTER MANAGEMENT AGENCY (NEFMA) (M1-D-YAA)
Case signed November 1991
\$7.3M PURPOSE: 6 AMRAAMs (Lot VII)
- (U) UNITED KINGDOM (UK-D-YDR) Case signed March 1992
\$120.4M PURPOSE: 210 AMRAAMs (Lots VII,VIII) and support
- (U) NORWAY (NO-D-YCY) Case signed 7 October 1992
\$60.0M PURPOSE: 100 AMRAAMs (Lots VIII,IX), 132 MRLs, 22
Captive Air Training Missiles (CATMs), and support equipment
- (U) TURKEY (TK-D-YDS) Case signed 17 December 1992
\$12.4M PURPOSE: 20 AMRAAMs (Lot VIII)
- (U) TURKEY (TK-D-YDT) Case signed 25 October 1993
\$34.9M PURPOSE: 60 AMRAAMs (Lot IX)
- (U) SOUTH KOREA (KS-D-YGN) Case signed 27 December 1993
\$127M PURPOSE: 190 AMRAAMs (Lot IX) and support

(b)(1)

- (U) NORWAY (NO-D-YCZ) Case signed 31 August 1994
\$94.2M PURPOSE: 228 AMRAAMs (Lots IX,X)
- (U) SWEDEN (SW-D-YCC) Case signed 1 September 1994
\$5.7M PURPOSE: 7 AMRAAMs (Lots X,XI) and support. Missile
procurement will be FMS administered direct commercial sales
- (U) SWEDEN (SW-D-YCD) Case signed 1 September 1994
\$60.8M PURPOSE: 100 AMRAAMs (Lot X) and support. Missile
procurement will be FMS administered direct commercial sales
- (U) FINLAND (FI-P-YAA) Case signed 4 November 1994
\$117.7M PURPOSE: 240 AMRAAMs (Lots X,XI,XII). Missile
procurement will be FMS administered direct commercial sales
- (U) DENMARK (DE-D-YAS) Case signed 8 December 1994
\$23.7M PURPOSE: 44 AMRAAMs (Lot IX) and support
- (U) TURKEY (TK-D-YDT) Case signed 13 December 1994
\$47.3M PURPOSE: 80 AMRAAMs (Lot X) and support

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AMRAAM (AIM-120), December 31, 1994

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:

DAE Approved Acquisition Program Baseline dated January 17, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY92\$)	11566.1	12302.9	
(2) Quantity	12018	13038	
(3) Unit Cost	0.962	0.914	1.990
b. (U) Procurement			
(1) Cost (BY92\$)	9420.1	10205.7	
(2) Quantity	12018	13038	
(3) Unit Cost	0.784	0.763	0.136

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AMRAAM (AIM-120), December 31, 1994

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	+1.7	-136.9	-	-135.2
Quantity	-	-1333.7	-	-1333.7
Schedule	-18.3	+1406.1	-	+1387.8
Engineering	+440.0	+133.4	-	+573.4
Estimating	+16.8	-732.3	-	-715.5
Other	-	-	-	-
Support	-	+28.0	-	+28.0
Subtotal	+440.2	-635.4	-	-195.2
Current Changes:				
Economic	1.7	-	-	+1.7
Quantity	-	-615.4	-	-615.4
Schedule	-	320.8	-	+320.8
Engineering	-	-48.1	-	-48.1
Estimating	114.0	-158.5	-	-44.5
Other	-	-	-	-
Support	-	39.9	-	+39.9
Subtotal	+115.7	-461.3	-	-345.6
Total Changes	+555.9	-1096.7	-	-540.8
Current Estimate	1906.5	10665.1	-	12571.6

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AMRAAM (AIM-120), December 31, 1994

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	-	-915.6	-	-915.6
Schedule	-16.8	+665.2	-	+648.4
Engineering	+357.2	+90.9	-	+448.1
Estimating	+21.8	-549.2	-	-527.4
Other	-	-	-	-
Support	-	-8.3	-	-8.3
Subtotal	+362.2	-717.0	-	-354.8
Current Changes:				
Quantity	-	-382.7	-	-382.7
Schedule	-	124.7	-	+124.7
Engineering	-	-38.7	-	-38.7
Estimating	58.1	-141.8	-	-83.7
Other	-	-	-	-
Support	-	23.1	-	+23.1
Subtotal	+58.1	-415.4	-	-357.3
Total Changes	+420.3	-1132.4	-	-712.1
Current Estimate	2146.0	9420.1	-	11566.1

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic indices.
Schedule: Reduced funding in FY94 slipped P3I Phase 2 and 3 schedules.
Engineering: Added funds for ECM updates and lethality improvements.
Added funds for further P3I technical definition.
Estimating: Adjusted current and prior years inflation.
Increased funds for FSD contract overruns.

Procurement

Economic: Revised economic escalation indices.
Adjusted for negative program change.

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AMRAAM (AIM-120), December 31, 1994

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

Quantity: Reduced program from 15,450 to 13,038 units
(decrease of 2,412 units).

Schedule: Reduced annual procurement profiles in the FY92
budget (extending program one year to FY02) and the
FY94 budget (extending the program three years to
FY05).

Engineering: Added non-recurring engineering costs to implement
P3I improvements.
Increased funds for the Value Engineering (VE)
program and Electronic Safe and Arm Device (ESAD).

Estimating: Adjusted current and prior years inflation.
Added technical support requirements from Raytheon
and extended engineering and testing.
Increased contractor overhead rates.
Delayed implementing value engineering changes.
Removed Defense Business Operations Fund.
Decreased estimate to accompany the decrease of
2,412 units.
Increased fixed costs associated with the program
stretch to FY05 and allocated contractor fixed
costs over reduced quantities.
Adjusted Lots I and II contracts overrun.
Revised estimate based on projecting aggressive Lot
VIII competitive prices.
Reduced costs based on changes in FMS quantities.
Revised estimating methodology for production test
and re-estimated production support.
Revised P3I implementation estimate due to Lot VIII
award.
Reduced special test equipment (STE) and other cost
categories in out years due to actuals.

Support: Added Interim Contractor Support (ICS) previously
funded in Operations and Maintenance (O&M).
Adjusted current and prior years inflation.
Decreased initial spares requirements.
Decreased other weapon system requirements.
Added spares required for program stretches.
Increased Navy PSE and logistics.
Added Common Field Level Memory Reprogramming
Equipment (CFMRE).
Decreased depot and training equipment.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

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AMRAAM (AIM-120), December 31, 1994

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
ECONOMIC CHANGES	N/A	+1.7
Revise escalation indices. (Economic)	N/A	-2.3
Economic adjustment for negative program change. (Economic)	N/A	+4.0
ESTIMATING CHANGES	+58.1	+114.0
Reduce P3I Phase 3 funds for propulsion contracts in Navy programs. (Estimating)	-165.3	-199.7
Fund core Navy infrastructure in support of all P3I efforts. (Estimating)	+7.5	+10.0
Adjust for current & prior year inflation. (Estimating)	+0.5	+0.5
Delay contract award for P3I phase 2 causing Air Force to realign FY94-FY97 funds to FY98. (Estimating)	-0.6	+0.4
Increase funds required for the revised P3I phase 3 roadmap FY98-FY03. (Estimating)	+125.4	+166.7
Added new estimate for P3I efforts in FY02-FY07. (Estimating)	+90.6	+136.1
RDT&E Subtotal	+58.1	+115.7
(2) <u>Procurement</u>		
ECONOMIC	N/A	--
Revise escalation indices. (Economic)	N/A	-59.2
Economic adjustment for negative program change. (Economic)	N/A	+59.2
QUANTITY		
Quantity variance associated with decreasing the program from 13,038 to 12,018 (decrease of 1020 units). (Quantity)	-382.7	-615.4
SCHEDULE		
Reduce annual procurement profile stretching the program two years from FY05 to FY07. (Schedule)	+124.7	+320.8
ENGINEERING		

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduce Electronic Safe and Arm Device (ESAD) and AMRAAM Producibility Enhancement Program (APREP) projects. (Engineering)	-38.7	-48.1
ESTIMATING	-141.8	-158.5
Adjustment for current & prior year inflation. (Estimating)	+16.1	+17.6
Estimating variance associated with decreased quantity. (Estimating)	-31.4	-51.1
Adjustment for prior year actuals. (Estimating)	-19.4	-20.6
Decrease estimate due to increased FMS quantities. (Estimating)	-111.7	-140.0
Decrease due to Lot VIII competition. (Estimating)	-74.2	-101.5
Delete ADA software requirements resulting from cost benefit analysis showing cost as prohibitive. (Estimating)	-4.6	-5.2
Reestimated production support because of reductions on government fixed costs. (Estimating)	-23.1	-27.9
Reduced P3I implementation due to contract actuals. (Estimating)	-13.9	-17.4
Increased rate impact caused by decreases in quantity. (Estimating)	+120.4	+187.6
SUPPORT	+23.1	+39.9
Adjustment for current & prior year inflation. (Support)	+1.4	+1.4
Increase spares required for program stretch to FY07. (Support)	+9.6	+14.8
Added peculiar support equipment in FY01-FY02 for logistics requirements. (Support)	+12.1	+23.7
Procurement Subtotal	-415.4	-461.3

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

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

PAUC (Dev 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 SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.849	-0.011	0.079	0.142	0.044	-0.063	--	0.006	0.197	1.046

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

a. (U) RDT&E --

(U) HUGHES P31 PHASE 2:
HUGHES MISSILE SYSTEM CO., TUCSON, AZ
F08626-93-C-0044, CPAF/CPFF
Award: June 30, 1994
Definitized: June 30, 1994

Initial Contract Price
Target Ceiling Qty

\$89.6 N/A 0

Current Contract Price
Target Ceiling Qty
\$90.3 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$90.3 \$90.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/25/94)	\$0.4	\$-0.2
Net Change	\$0.4	\$-0.2

Explanation of Change:

This is the first time this contract is reported in the SAR.

With a positive cost variance and one Contractor Performance Report (CPR), the program manager and contractor estimate at completion are the same.

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

The net change in current target price from initial contract target price is due to the addition of time and materials and fixed Contract Line Item Numbers (CLIN).

b. (U) Procurement --

(U) HUGHES LOTS V/VI:
HUGHES AIRCRAFT COMPANY, TUCSON, AZ
F08626-91-C-0038, FFP
Award: June 28, 1991
Definitized: June 28, 1991

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$359.2	N/A	540

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$758.9	N/A	981

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$758.9	\$758.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VI option.

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

Cost and schedule variance are not required on FFP contracts.

(U) RAYTHEON LOTS V/VI:
RAYTHEON COMPANY, BEDFORD, MA
F08626-91-C-0093, FFP
Award: June 28, 1991
Definitized: June 28, 1991

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$186.1	N/A	270

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$537.3	N/A	810

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$537.3	\$537.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

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AMRAAM (AIM-120), December 31, 1994

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

The net change in current target price from the initial contract target price is due to the addition of contract modifications exercising the Lot VI option.

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

Cost and schedule variance are not required on FFP contracts.

(U) <u>HUGHES LOTS VII/VIII:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
HUGHES AIRCRAFT COMPANY, TUCSON, AZ				
FO8626-93-C-0007, FFP	\$333.2	N/A	849	
Award: February 22, 1993				
Definitized: February 22, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$581.5	N/A	1362	\$581.5	\$581.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VIII option.

Cost and schedule variance are not required on FFP contracts.

(U) <u>RAYTHEON LOTS VII/VIII:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
RAYTHEON COMPANY, BEDFORD, MA				
FO8626-93-C-0008, FFP	\$294.3	N/A	614	
Award: February 22, 1993				
Definitized: February 22, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$532.1	N/A	1383	\$532.1	\$532.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

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

Explanation of Change:

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VIII option.

Cost and schedule variance are not required on FFP contracts.

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

a. (U) Program Status --

- (1) Percent Program Completed: 61.3% (19 yrs/31 yrs)
- (2) Percent Program Cost Appropriated: 62.0% (\$7796.5 / \$12571.6)

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

<u>Appropriation</u>	<u>Prior Years (FY77-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2007)</u>	<u>Total</u>
RD&E	1394.2	46.8	54.1	411.4	1906.5
Procurement	5402.3	281.4	319.8	3661.6	10665.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7796.5	328.2	373.9	4073.0	12571.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate - (%)
		Nonrec	Rec		-Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1978				11.9	6.0	4.0	6.0	6.8
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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pend	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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	4.2	2.8
1987				5.8	5.0	5.0	5.0	2.7
1988				25.1	22.3	22.3	22.2	3.0
1989				13.3	12.4	12.4	12.4	4.2
1990				7.2	6.9	6.9	6.9	4.0
1991				3.5	3.5	3.5	3.5	4.3
1992				2.4	2.5	2.5	2.5	2.8
1993				3.0	3.1	3.0	2.9	2.7
1994								2.0
1995				14.2	15.6			2.7
1996				4.0	4.5			3.0

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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: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1997				4.2	4.9			3.0
1998				4.0	4.8			3.0
1999				4.0	5.0			3.0
2000				3.8	4.9			3.0
2001				3.7	4.9			3.0
Subtot				259.0	203.0	158.3	158.1	

Appropriation: 1507 Weapons Procurement, Navy

1989	26	3.8	26.2	32.5	32.0	32.0	30.3	4.2
1990	85	18.6	61.3	84.8	85.1	84.4	80.2	4.0
1991	300	48.7	184.9	250.6	259.6	259.6	215.6	4.3
1992	191	37.1	109.3	186.0	195.5	172.5	106.1	2.8
1993	165	18.8	67.2	97.5	105.1	100.5	16.7	2.7
1994	75	21.3	24.0	53.1	58.9	51.9	20.5	2.0
1995	106	22.5	39.1	71.4	81.5	17.0	0.4	2.7
1996	115	17.2	40.1	70.5	82.9			3.0
1997	220	20.9	76.9	111.9	135.6			3.0
1998	216	18.7	80.6	116.3	145.1			3.0

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1999	292	21.9	105.6	141.8	182.2			3.0
2000	296	20.2	107.1	139.7	185.0			3.0
2001	270	16.4	98.9	126.8	173.0			3.0
2002	210	22.5	74.9	106.6	149.8			3.0
2003	200	19.3	72.2	99.9	144.6			3.0
2004	200	19.3	72.5	100.1	149.1			3.0
2005	200	19.8	75.0	103.1	158.2			3.0
2006	200	19.7	72.9	101.1	159.8			3.0
2007	218	20.9	82.1	111.5	181.5			3.0
Subtot	3585	407.6	1470.8	2105.2	2664.5	717.9	469.8	
Navy	3585	407.6	1470.8	2364.2	2867.5	876.2	627.9	

Appropriation: 3600 Research, Development, Test + Eval, AF

1977				10.3	4.8	4.8	4.8	7.5
1978				13.2	6.7	6.7	6.7	6.0
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

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AMRAAM (AIM-120), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

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	197.3	3.8
1985				256.0	206.6	206.6	206.6	3.4
1986				110.2	91.1	91.1	91.1	2.8
1987				43.6	37.7	33.5	33.5	2.7
1988				30.1	26.7	26.6	26.6	3.0
1989								4.2
1990				12.4	11.9	11.6	11.6	4.0
1991				18.0	17.9	17.6	17.6	4.3
1992				29.6	30.3	30.2	30.1	2.8
1993				37.1	38.9	38.8	38.4	2.7
1994				61.4	65.8	60.8	15.2	2.0
1995				62.2	68.5	2.5	0.3	2.7
1996				37.3	42.3			3.0
1997				42.1	49.2			3.0
1998				46.0	55.4			3.0
1999				33.2	41.2			3.0

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AMRAAM (AIM-120), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2000				33.2	42.4			3.0
2001				33.2	43.7			3.0
2002				23.8	32.3			3.0
2003				23.9	33.3			3.0
2004				23.9	34.3			3.0
2005				23.9	35.3			3.0
2006				23.9	36.4			3.0
2007				23.9	37.5			3.0
Subtot				1887.0	1703.5	1144.1	1095.8	

Appropriation: 3020 Missile Procurement, Air Force

1984		34.2	1.9	36.1	29.3	29.3	29.3	8.0
1985		84.0	4.9	88.8	74.1	74.1	74.1	3.4
1986		164.0	58.0	226.7	197.9	197.9	197.9	2.8
1987	180	205.5	427.0	655.1	596.1	596.1	596.1	2.7
1988	400	216.4	521.0	753.5	711.3	704.2	700.0	3.0
1989	874	109.7	676.8	803.0	791.8	784.6	783.0	4.2
1990	803	88.0	574.0	679.9	682.6	675.6	662.7	4.0

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AMRAAM (AIM-120), December 31, 1994

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: 3020 Missile Procurement, Air Force (Cont'd)

1991	600	183.8	383.3	590.5	611.8	538.3	508.1	4.3
1992	700	69.6	417.5	504.5	530.2	526.9	397.3	2.8
1993	1000	130.7	404.8	564.2	608.2	576.3	211.9	2.7
1994	983	81.7	311.2	412.6	457.6	416.1	64.8	2.0
1995	412	58.6	166.2	257.2	293.7	23.9	0.2	2.7
1996	291	65.1	94.2	168.8	198.5			3.0
1997	240	54.6	81.1	152.0	184.2			3.0
1998	200	47.7	83.2	141.9	177.1			3.0
1999	200	47.3	81.7	135.8	174.5			3.0
2000	200	47.3	83.9	137.4	181.9			3.0
2001	200	63.2	79.7	156.8	213.9			3.0
2002	200	47.4	89.2	143.1	201.1			3.0
2003	200	47.5	90.0	144.1	208.5			3.0
2004	200	47.2	90.2	143.9	214.4			3.0
2005	200	47.4	90.2	144.1	221.2			3.0
2006	200	48.8	91.2	146.5	231.6			3.0
2007	150	49.3	72.7	128.4	209.1			3.0
Subtot	8433	2039.0	4973.9	7314.9	8000.6	5143.3	4225.4	

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AMRAAM (AIM-120), December 31, 1994

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: 3020 Missile Procurement, Air Force (Cont'd)

USAF	8433	2039.0	4973.9	9201.9	9704.1	6287.4	5321.2	
Grand Total	12018	2446.6	6444.7	11566.1	12571.6	7162.6	5949.1	

Summary does not include funding or quantities for Seek Eagle procurements of 12 AMRAAM in FY90, 24 AMRAAM in FY94, and 18 Captive Air Training Missiles (CATM) in FY95.

The recurring flyaway in FYs 84 - 86 is for 15 missiles in the Raytheon qualification lot and are not considered fully configured end items.

Funding reflects OSD approved inflation indices dated January 31, 1995.

Expenditures and obligations reflect program office records as of December 31, 1994.

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
EDT&E	111/111
Procurement	4034/4043

Hughes and Raytheon are ahead of schedule in missile deliveries by 8 and 1 missiles, respectively.

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AMRAAM (AIM-120), December 31, 1994

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

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

	(Average Unit Flyaway Cost)		
	Development	Current	Latest Approved
	<u>Estimate</u>	<u>Estimate</u>	<u>Threshold</u>
@ 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.

This section requires no update after Milestone III.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

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 20 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 year ICS), supply/item management, transportation, replenishment spares, and field software updates. The Navy estimate includes AMRAAM fleet operations and

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AMRAAM (AIM-120), December 31, 1994

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

support, intermediate maintenance at NWS, depot rework (five 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 was updated December 1994.

There are no antecedent systems; the AMRAAM is designed to augment the AIM-7 Sparrow.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	AMRAAM Average Annual Cost Per Year	Antecedent Average Annual Cost Per Year
1.0 Mission Personnel	1.7	N/A
2.0 Unit-LVL Consumption	16.1	N/A
3.0 Inter Maintenance	0.1	N/A
4.0 Depot Maintenance	10.5	N/A
5.0 Contractor Support	1.3	N/A
6.0 Sustaining Support	3.9	N/A
7.0 Indirect Support	0.2	N/A
Total	33.8	N/A

Because of the program acquisition stretch to 21 lots, about 80 percent of the missiles procured are captured by the O&S estimate model. O&S costs have decreased because the same 20 year deployment phase contains fewer missiles and unit cost has decreased.

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AMRAAM (AIM-120), December 31, 1994

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M (USAF)	4.5	---	---	---	4.5
Industrial Fund	---	---	---	---	---
Total	4.5	---	---	---	4.5

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A-1 ADDS

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SELECTED ACQUISITION REPORT (ACS:DD-COMP(O&A)823)
PROGRAM: ADDS (EPLRS)

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):
ARMY DATA DISTRIBUTION SYSTEM (EPLRS)

MAR 26 1995

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PROJECT MANAGER, TACTICAL RADIO COMMUNICATIONS SYSTEMS COL LALIT K. PIPLANI
Assigned: August 1, 1994
ATTN: SPAE-CM-TRCS AV 995-3063 COMM (908) 544-3063
FORT MONMOUTH, NJ 07703-5216

4. Program Elements/Procurement Line Items:

- RDTE:
- PE 63713 (Shared) Project D370
- PROCUREMENT:
- APPN 2035 ICN BA9620 (Army) (Shared)
 - APPN 2035 ICN BA970A (Army) (Shared)
 - APPN 2035 ICN BA9712 (Army) (Shared)
 - APPN 2035 ICN BU1400 (Army) (Shared)
 - APPN 2035 ICN MA9712* (Army) (Shared)
 - APPN 2035 ICN TO1600 (Army) (Shared)
 - APPN 2035 ICN TO3200 (Army) (Shared)
 - APPN 2035 ICN TO6200 (Army)
 - APPN 2035 ICN TO6400 (Army)

George Brownell

*This MDEF will start in FY 95 to replace BA9712 as Initial Spares.

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ADDS (EPLRS), December 31, 1994

5. Related Programs:

Position Location Reporting System (PLRS), Joint Tactical Information Distribution System (JTIDS), Army Tactical Command & Control System (ATCCS) and Army Theater Missile Defense (ATMD).

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 Enhanced PLRS User Units. The EPUU is a radio that can be configured as a Manpack Unit (MPU), a Surface Vehicle Unit (SVU) and an Airborne Vehicle Unit (AVU). The Army portion of the JTIDS program is the JTIDS Class 2M Terminal which is a computerized radio 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 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 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)

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ADDS (EPLRS), December 31, 1994

7a. Program Highlights (Cont'd):

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 Capability (ROC) for ADDS. On 16 October 1986, a revised O&O Plan was approved by TRADOC for use in support of EPLRS system development and to supersede the PJH O&O Plan dated 20 August 1984. In May 1988, Milestone IIIA for EPLRS Pre-Planned Product Improvement (P3I) was successfully completed. EPLRS Technical Test conducted in 1989 revealed several software and hardware system anomalies. 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 Low Rate Initial Production (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. In FY 91, funding reductions eliminated JTIDS Full Scale Production and deferred EPLRS VHSIC Technology program. The Army planned to integrate the Very High Speed Integrated Circuit (VHSIC) into EPLRS Initial Full Scale Production in FY 95. EPLRS Option 2 was exercised in January 1992.

In 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. The Army Theater Missile Defense/Strategic Defense Initiative Office (ATMD/SDIO) identified requirements for the JTIDS Class 2M Terminals. To support future requirements, JTIDS scheduled a Low Rate Initial Production decision at Milestone IIIA. The Army intended to field the EPLRS to the Active Forces for 4 Divisions, 1 Corps, 1 Armored Cavalry Regiment (ACR) and 1 Corps Artillery; and the JTIDS was intended to be fielded to the Active Forces as Air-to-Ground links only for 12 Divisions, 4 Corps, 2 ACRs, 4 Separate Brigades and 9 Patriot Battalions. The Army did not fund EPLRS Full Rate Production pending completion of a Combined Arms Center (CAC) review to determine army data distribution needs.

EPLRS LRIP Option 3 was exercised in May 1993. EPLRS Technical Test was successfully completed in July 1993. Both the NCS-E and EPUU radio set exceeded reliability requirements. EPLRS successfully

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ADDS (EPLRS), December 31, 1994

7a. Program Highlights (Cont'd):

deployed to the National Training Center (NTC) with the 24th ID (Mech) in November 1993. The system was fully operated by 24th ID soldiers and proved to be a significant combat power multiplier. During FY 93, the Net Control Station - JTIDS (NCS-J)/Dedicated JTIDS Relay Unit (DJRU) effort was terminated based on the Army proceeding with JTIDS Air-to-Ground requirements only. The blocked ADDS JTIDS Operational Requirement Document (ORD) was approved by the Army on 10 September 1993. JTIDS Reliability Development Test (RDT) was successfully completed in October 1993. Based on the FY 95 FYDP, JTIDS Class 2M Terminal Low Rate Initial Production (LRIP) was delayed one year to FY 96 and JTIDS Class 2M Terminal quantities were reduced from 65 to 56. JTIDS Class 2M Terminal production schedule is based on the planned JTIDS Class 2M Terminal requirements of the Army Theater Missile Defense (ATMD) programs. On 18 January 1994, the Army approved the updated the EPLRS Required Operational Capability (ROC).

b. Significant Developments Since Last Report --
EPLRS Very High Speed Integrated Circuit (VHSIC) Retrofit ECP was awarded on 31 May 1994. EPLRS completed Operational Test & Evaluation in July/August 1994. EPLRS participated in the Army Warfighting Experiment at National Training Center in March/April 1994. EPLRS was operationally effective and was a key component of the Army Warfighting Experiment. Due to the Army's force restructure and new data distribution needs, the EPLRS current fielding posture is as follows: 2 Divisions (1st Cavalry and 24th ID), Brigade 21 (Part of 2nd Armored Division), 3rd Armored Cavalry Regiment. The Army JTIDS Class 2M Terminal program is accounted for by the Joint Program Office for JTIDS. US Air Force (Hanscom AFB) has lead and maintains the APB, SAR and DAES. All performance characteristics, milestone schedules and cost associated with the JTIDS Class 2M Terminal program have been deleted from the ADDS program. On March 27, the USD(ASST) redesignated ADDS as an ACAT II program because it was below ACAT I dollar threshold. It is anticipated that this will be the final SAR.

The ADDS system is expected to satisfy all mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are schedule and performance breaches to the Acquisition Program Baseline (APB) dated 8 March 91.

There are Program Acquisition Unit Cost (PAUC) and Average Unit Procurement Cost (AUPC) Nunn McCurdy breaches previously reported in the 31 December 92 SAR.

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ADDS (EPLRS), December 31, 1994

8. Threshold Breaches (Cont'd):

A Program Deviation Report and the revised Acquisition Program Baseline (APB) have been submitted. The APB is currently being staffed in OSD.

9. Schedule:

a. Milestones --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
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
P3I Phase C Option 3 Award	N/A	N/A	MAY 93
Technical Test III			
Start	N/A	MAY 93	MAY 93
Complete	N/A	JUL 93	JUL 93
VHSIC Retrofit ECP Award	N/A	N/A	MAY 94(Ch-1)
Operation Test & Eval	AUG 87	APR 94	N/A
Start	N/A	N/A	JUL 94
Complete	N/A	N/A	AUG 94(Ch-2)
P3I First Unit Equipped (Conditional)	N/A	MAY 94	N/A (Ch-3)
P3I First Unit Equipped (FUE)	SEP 88	N/A	FEB 95(Ch-3)
Milestone IIIB	N/A	SEP 94	N/A
Full Scale Production Contract Award	JUL 88	N/A	N/A
Production Award	N/A	NOV 94	N/A
First Full Rate Production Delivery	N/A	NOV 96	N/A
Follow-on Test & Eval	N/A	AUG 97	N/A
IOC 1/	N/A	FEB 97	FEB 96(Ch-3)
Production Award (NCS-E Downsized)	N/A	N/A	JAN 96(Ch-1)
First Production Unit Delivery (NCS-E Downsized)	N/A	N/A	JAN 97(Ch-1)

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ADDS (EPLRS), December 31, 1994

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>	
Organic Support Capability	N/A	N/A	JAN 97	(Ch-3)
Service Depot Support	N/A	N/A	JAN 97	(Ch-3)
Joint Tactical Information Distribution System (JTIDS)				
Technical Test				
Start	N/A	JUN 90	N/A	(Ch-4)
Complete	N/A	DEC 90	N/A	(Ch-4)
Operational Test & Eval				
Complete	N/A	JUN 91	N/A	(Ch-4)
System Tech Test/Initial Op Assessment 2/				
Start	N/A	OCT 91	N/A	(Ch-4)
Complete	N/A	MAY 92	N/A	(Ch-4)
Limited User Test/Initial Operational Assessment				
Start	N/A	N/A	N/A	(Ch-4)
Complete	N/A	N/A	N/A	(Ch-4)
Milestone III	N/A	SEP 93	N/A	(Ch-4)
First Unit Equipped 1/	N/A	SEP 93	N/A	(Ch-4)
First Unit Equipped (Interim) 1/	N/A	N/A	N/A	(Ch-4)
Milestone IIIA (Class 2M only)	N/A	N/A	N/A	(Ch-4)
Milestone IIIA (Class 2/2H DAB and Class 2M LRIP Decision)	N/A	N/A	N/A	(Ch-4)
Low Rate Initial Production Award	N/A	N/A	N/A	(Ch-4)
Initial Operational Test & Evaluation				
Start	N/A	N/A	N/A	(Ch-4)
Complete	N/A	N/A	N/A	(Ch-4)
Milestone IIIB	N/A	N/A	N/A	(Ch-4)
Production Award	N/A	DEC 93	N/A	(Ch-4)
Low Rate Initial Production Delivery	N/A	N/A	N/A	(Ch-4)
Organic Support Capability	N/A	N/A	N/A	(Ch-4)
Service Depot Support	N/A	N/A	N/A	(Ch-4)
Production Delivery	N/A	JUN 96	N/A	(Ch-4)
IOC	N/A	FEB 98	N/A	(Ch-4)

1/ Low Rate Initial Production (LRIP) assets for EPLRS Initial Operational Capability (IOC) and Research and Development assets for JTIDS First Unit Equipped (FUE) (Interim).

2/ Test consisted of the JTIDS Class 2M Terminal and the Net Control Station - JTIDS/Dedicated JTIDS Relay Unit (NCS-J/DJRU). As JTIDS will undergo an LUT/IOA in FY 95, Operational Test and Evaluation Command (OPTEC) decided to forego the Initial Operational Assessment

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ADDs (EPLRS), December 31, 1994

9a. Schedule (Cont'd):

(IOA) in FY 92. Only the NCS-J/DJRU System Technical Test was completed in September 1992.

b. Previous Change Explanations --

All EPLRS historical milestones not in the APB have been deleted. Complications with the completion of Technical Test (TT) changed OT&E and related milestones. EPLRS Milestone IIIA occurred MAY 88 versus APR 88. EPLRS Milestone IIIB was added. JTIDS milestones were added as part of ADDs. ADDs rebaselined, corrected system deficiencies, removed concurrency to the program schedule, reduced near-term procurement quantities to Operational Test units only and effected these changes: P3I First Production Delivery from JUN 91 to JUL 92; Operational Test and Evaluation from APR 90 to APR 94; Milestone IIIB from SEP 90 to SEP 94; and First Production Delivery in FEB 93 versus OCT 91. EPLRS Production System Verification testing eliminated EPLRS Technical Test Phase 3. EPLRS Technical Test III started in MAY 93 and completed in JUL 93. EPLRS Follow-On Test & Evaluation changed from NOV 95 to AUG 97 when production assets are available. EPLRS First Unit Equipped was eliminated. EPLRS and JTIDS IOC were added. JTIDS Technical Test Complete was changed from DEC 90 to MAR 91. JTIDS Operational Test & Evaluation (Start and Complete) were changed to System Technical Test/Initial Operation Assessment (Start and Complete) to allow a greater system test. JTIDS Milestone III and FUE were changed to SEP 93 due to funding shortfalls in FY 92/93.

JTIDS Full Scale Production was changed to Production Award and First Production Delivery to Production Delivery. EPLRS Option 2 was awarded in JAN 92. The reliability growth program delayed EPLRS P3I First Production Delivery from JUL to SEP 92. EPLRS Option 3 was awarded in MAY 93. Added Organic Support Capability and Service Depot Support milestones. EPLRS production was not planned, EPLRS Milestone IIIB, Production Award, First Full Rate Production Delivery, and FOT&E were eliminated. The NCS-J/DJRU software Test-Analyze-and-Fix (TAAF) program delayed completion of System Technical Test from MAY to SEP 92. JTIDS program restructure added: Limited User Test/ Initial Operational Assessment; LRIP decision at Milestone IIIA; LRIP Award; Initial Operational Test and Evaluation; and LRIP Delivery. To support future requirements, JTIDS Milestone III was changed to Milestone IIIA (CL2M only). JTIDS First Unit Equipped was changed to First Unit Equipped (Interim). EPLRS Operational Test and Evaluation Start/Complete was changed from MAY 94 to JUL/SEP 94 due to test rescheduling from one to three months. P3I First Unit Equipped (conditional) was changed from JUN 94 to DEC 94 due to change in test window. Organic Support Capability and Service Depot Support were changed from MAY 94 to JAN 95 due to revision of fielding schedule. EPLRS IOC was reinstated to occur in DEC 95, EPLRS LRIP assets will be used. JTIDS LUT changed from AUG/JAN 94 to OCT/DEC 94 because OPTEC unfunded the test. The Army

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ADDS (EPLRS), December 31, 1994

9b. Schedule (Cont'd):

JTIDS Class 2M LRIP decision will occur during the Joint Program Office DAB scheduled for FEB 95 and for the testing to coincide with the host systems (PM, PATRIOT and PM THAAD) IOTSE schedules, the following changes occurred: Milestone IIIA (Class 2M only) was replaced with Milestone IIIA (Class 2/2H DAB and Class 2M LRIP Decision) to occur in FEB 95; JTIDS LRIP Award changed from NOV 94 to FEB 96 when funds are available for procurement; Initial Operational Test & Evaluation Start/Complete changed from JAN/MAR 96 to OCT 96/JAN 97; Milestone IIIB from SEP to MAR 97; Production Award from NOV to JUL 97; Low Rate Initial Production Delivery, Organic Support Capability and Service Depot Support from SEP 96 to NOV 97; Production Delivery from MAY to JUL 99 and JTIDS IOC from FEB 98 to FEB 99.

c. Current Change Explanations --

(Ch-1) VHSIC Retrofit ECP Award occurred in MAY 94, Production Award (NCS-E Downsized), and First Production Unit Delivery (NCS-E Downsized) were added milestones for the restructured EPLRS program product improvements.

(Ch-2) Operational Test & Evaluation - complete was changed from SEP 94 to AUG 94 due to accelerated test schedule.

(Ch-3) P3I First Unit Equipped (Conditional) to have occurred in DEC 94 was replaced by P3I First Unit Equipped (FUE) to occur in FEB 95. IOC was rescheduled from DEC 95 to FEB 96. Organic Support Capability and Service Depot Support were also rescheduled from JAN 95 to JAN 97. These changes were due to Army force restructure and new data distribution needs which redefined EPLRS fielding posture and schedule.

(Ch-4) The Army JTIDS Class 2M Terminal program is accounted for by the Joint Program Office for JTIDS. USAF (Hanscom AFB) has lead and maintains the APB, SAR and DAES. All milestone schedules associated with the JTIDS Class 2M Terminal program have been deleted from the ADDS program.

d. References --

Planning Estimate:

SDDM, dated 8 August 1979.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1991.

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10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
Mean Time Between Failure (lower limit/confidence level)(hrs)					
NCS-E	100	125(80%) / 100(80%)	134(80%)	134(80%)	
EPUU	500	700(80%) / 500(80%)	1671 (80%)	1671 (80%)	
JTIDS Class 2M Terminal	120	400(70%) / 400(70%)	548(80%)	N/A	(Ch-1)
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	N/A	(Ch-1)
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	N/A	
EPUU (in)	10.1x 10.7x4	14.7x / 14.7x 10.5x5.1 / 10.5x5.1	14.7x 10.5x5.1	14.7x 10.5x5.1	
JTIDS Class 2M Terminal (in)	N/A	25x15x10 / 25x15x10	25x15x10	N/A	(Ch-2)
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	N/A	
EPUU/Manpack 2/	17	28 / 28	28	28	
JTIDS Class 2M Terminal	N/A	88 / 94	94	N/A	(Ch-2)
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	N/A	(Ch-1)
Channels					
EPUU	8	8 / 8	8	8	
JTIDS Class 2M Terminal	128	51 / 51	51	N/A	(Ch-1)
Frequency Band (MHz)					
NCS-E	420-450	420-450 / 420-450	420-450	420-450	

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10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
EPUU	420-450	420-450 / 420-450	420-450	420-450	
JTIDS Class 2M Terminal	960-1215	960-1215 / 960-1215	960-1215	N/A	(Ch-1)
Message Length (bits)- Speed of Service (secs) for selected users	80-4	80-4 / 80-4	80-4	80-4	

1/ JTIDS Cl2M Terminal 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 were grouped separately to more accurately reflect technical characteristics. The JTIDS Class 2M Terminal size was changed based in 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 stated 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 was planned to meet 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 stated that the 94 lb. weight of the JTIDS EDM Terminal is acceptable for operational use. The MTBFs for NCS-E, EPUU and JTIDS Class 2M Terminal changed from 125(80%) to 134(80%), 500(80%) to 1671(80%) and 400(70%) to 548(80%) respectively based on the results of EPLRS Technical Test and JTIDS RDT conducted in 1993.

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10c. Performance Characteristics (Cont'd):

c. Current Change Explanations --

(Ch-1) The Army JTIDS Class 2M Terminal program is accounted for by the Joint Program Office for JTIDS. USAF (Hanscom AFB) has lead and maintains the APB, SAR and DAES. All performance characteristics associated with the JTIDS Class 2M Terminal program have been deleted from the ADDS proposed APB and are not applicable.

(Ch-2) JTIDS performance characteristics have been deleted from the ADDS proposed APB.

d. References --

Planning Estimate:

SDDM, dated 8 August 1979.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1991.

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

a. Cost --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	175.3	286.0	230.1
Procurement	1806.2	1318.1	374.4
NCS	(229.7)		(107.1)
Other Components	(1270.6)		(208.9)
Total Flyaway	(1500.3)		(316.0)
Other Weapon Systems	(121.3)		(41.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(184.6)		(17.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 83 Base-Year \$	1981.5	1604.1	604.5
 Escalation	1056.7	1248.9	156.6
Development (RDT&E)	(13.7)	(51.9)	(29.3)
Procurement	(1043.0)	(1197.0)	(127.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	3038.2	2853.0	761.1

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

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
b. Quantity --			
Development (RDT&E)	0	N/A	8
Procurement	<u>85</u>	<u>108</u>	<u>15</u>
Total	85	108	23

Note: Excludes 3 RDTE prototypes from the SAR Baseline and 2 from the Current Estimate that are not considered fully configured.

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 Use Units (EPUUs). Significant funding reductions to the ADDS program have reduced the number of representative networks to 23 NCS-Es (8 RDT&E units (delivered); 1 refurbished EDM - Fullsized; 7 fully configured Downsized; and 15 OPA units; 8 LRIP Fullsized (delivered) and 7 production units Downsized (to be procured in FY 96)).

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 March 08, 1991.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (MAR 91 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY83\$)	604.5	1604.1	
(2) Quantity	23	108	
(3) Unit Cost	26.283	14.853	76.954

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12. Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY83\$)	374.4	1318.1	
(2) Quantity	15	108	
(3) Unit Cost	24.960	12.205	104.513

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (MAR 91 APB)	<u>Percent Change</u>
c. Total Program			
(1) Cost (TY\$)	761.1	2853.0	
(2) Unit Cost	33.091	26.417	25.267
d. Procurement			
(1) Cost (TY\$)	501.7	2515.1	
(2) Unit Cost	33.447	23.288	43.622

e. Changes from the Baseline Report - Not Applicable

f. Changes from the Previous SAR (DEC 93 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY83\$)	20.141	327.923
(2) PAUC (BY83\$)	26.948	-1355.533
(3) PAUC Quantity	8	53.333
(4) PAUC (TY\$)	27.082	450.691
(5) AUPC (TY\$)	37.603	-904.788

g. Initial SAR

(1) Program Acquisition Cost (BY\$) --	1981.5
(2) Program Acquisition Cost (TY\$) --	3038.2

Initial SAR is DEC 83.

h. Unit Cost Changes.

(1) PAUC --

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12. Unit Cost Summary (Cont'd):

The changes in the Program Acquisition Unit Cost was due to the significant funding reduction to the ADDS program.

(2) AUPC --

The changes in the Average Unit Procurement Cost (AUPC) was due to the significant funding reduction to the ADDS program.

i. Impact of Performance or Schedule Changes on Unit Cost. - None.

j. Program Management and Control.

The PM ADDS contractor for its major acquisition contract provides the government a monthly Cost Performance Report (CPR) which details every aspect of performance, schedule and cost as negotiated. The reporting is by Work Breakdown Structure with corresponding dollar value. It provides PM ADDS management data to properly analyze and evaluate contractor's performance in regards to status of production and deliveries with associated costs. The CPR is an excellent management tool in controlling cost.

k. Cost Control Actions.

The PAUC and AUPC breaches were not caused by PM ADDS management actions but rather by significant funding reduction. Nevertheless, PM ADDS management and the contractor for the major acquisition contract are committed to the ADDS program's efficient and effective utilization of funds and are closely monitoring every aspect of the contract.

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: 210.8
- (5) Percent contract completed (BCWP/target cost): 86.46
- (6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$+4.9/N/A	\$-5.6/N/A
Previous SAR	\$+4.9/N/A	\$-5.6/N/A
Current Values	\$+5.5/0.00%	\$-2.9/0.00%
Change from the Baseline Report	\$+0.6/N/A	\$+2.7/N/A
Change from the Previous SAR	\$+0.6/N/A	\$+2.7/N/A

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12. Unit Cost Summary (Cont'd):

(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.

(8) Impact of Variances on Contract. -

Negative Schedule Variance is insignificant. No impact on contract.

(9) Impact of Variances on Unit Costs. -

The insignificant negative Schedule Variance has no impact to the Unit Costs.

m. Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

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13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	189.0	2849.2	0.0	3038.2
Previous Changes:				
Economic	-7.5	-216.7	-	-224.2
Quantity	-	-2165.8	-	-2165.8
Schedule	+38.0	+423.2	-	+461.2
Engineering	+126.5	-495.3	-	-368.8
Estimating	-11.8	+565.1	-	+553.3
Other	-	-	-	-
Support	-	-391.3	-	-391.3
Subtotal	+145.2	-2280.8	-	-2135.6
Current Changes:				
Economic	3.1	35.2	-	+38.3
Quantity	-	10.0	-	+10.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-77.9	-110.3	-	-188.2
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	-74.8	-66.7	-	-141.5
Total Changes	+70.4	-2347.5	-	-2277.1
Current Estimate	259.4	501.7	-	761.1

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

a. Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	175.3	1806.2	0.0	1981.5
Previous Changes:				
Quantity	-	-1157.3	-	-1157.3
Schedule	+26.0	-5.9	-	+20.1
Engineering	+96.3	-359.0	-	-262.7
Estimating	-12.1	+372.7	-	+360.6
Other	-	-	-	-
Support	-	-248.0	-	-248.0
Subtotal	+110.2	-1397.5	-	-1287.3
Current Changes:				
Quantity	-	6.3	-	+6.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-55.4	-41.1	-	-96.5
Other	-	-	-	-
Support	-	0.5	-	+0.5
Subtotal	-55.4	-34.3	-	-89.7
Total Changes	+54.8	-1431.8	-	-1377.0
Current Estimate	230.1	374.4	-	604.5

b. Previous Change Explanations --

RD&E

Economic: Revised Escalation Indices.

Schedule: Schedule stretchout 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 and GFE for Standard Integrated Command Post (SICP) for NCS-J. Downsizing of the NCS-E was required which utilizes a smaller shelter and ADA computer language. Planned engineering efforts were eliminated due to funding reductions.

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

Estimating: Increased funding to support EPLRS System upgrades. Dollars were included in both ADDS and JTIDS SARs. Increased funds for Phase 5 contract award. Adjusted BY dollars for FY 81-89 in the DEC 89 SAR. Refined NCS-E downsizing estimate and included USMC cost sharing. Adjusted prior year allocations to reflect actual program. Current & Prior Inflation offset. Continued refinement of NCS-E downsizing effort. Adjusted error in calculating BY 83 dollars in DEC 91 SAR. Increased RDT&E costs due to one year delay in JTIDS production in DEC 93 SAR.

Procurement

Economic: Revised Escalation Indices. Economic adjustment for negative program change.

Quantity: Changed NCS-E quantity from 4 per Division to 5 and from 6 per Corps to 8. Reduced EPUU quantity from 24,875 to 22,103 and NCS-E from 140 to 123. Reduced EPUU quantity from 22,103 to 14,518. Force structure changes and funding adjustments reduced the quantities in the Dec 90 SAR: NCS-E from 120 to 108; EPUU from 14,518 to 12,022; and JTIDS CL2M Terminals from 586 to 23. Force structure changes and funding adjustments reduced the quantities in the Dec 91 SAR: NCS-E to 102; EPUU to 11,152; JTIDS to 20. Funding adjustments reduced the EPLRS quantities in the Dec 92 SAR: NCS-E to 14 and EPUU to 1,808. JTIDS CL2M quantity increased from 20 to 65. NCS-E decreased from 14 to 8 and JTIDS from 65 to 56 units.

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 FY 2008 vs FY 2011. Funding adjustments changed production schedule of NCS-E, EPUU and JTIDS CL2M Terminals. JTIDS CL2M will be procured in FY96 instead of FY95.

Engineering: Changed due to NCS-E downsizing and JTIDS Class 2M being substituted for Class 2 Terminal. Eliminated PLRS Steerable Null Antenna Processor (PSNAP) and removed JTIDS CL2M Terminal from the NCS-E. Added PM checktest prior to Technical Test. Added Manprint improvements and testing which were required for the EPLRS restructured program. Budget cuts eliminated VHSIC effort. Increased funds for VHSIC Retrofit ECP.

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

Estimating: Error in calculating the first unit cost in Dec 85 and Sep 86 SARs. Interface Unit was omitted from Dec 85 SAR. Changed acquisition strategy for EPUUs to a single source. Spares cost was increased due to increase in operating tempo from 300 hours to 1300 hours for EPUU. Changed acquisition strategy for the JTIDS Class 2M Terminal from a single source to Leader/Follower. Increased Post Deployment Software Support due to an "estimating model" data base change. Shifted procurement years of Initial Spares (support). Adjusted computation of BY dollars for FY 86-88 in the Dec 89 SAR. Used newly developed First Unit Cost for JTIDS CL2M Terminal. Corrected previous cost variance changes miscategorization. Error in learning curve slope in previous SARs. Corrected BY 83 dollars in Dec 91 SAR. Current and Prior Inflation offsets. Adjusted funding profile. Refined JTIDS CL2M production estimate based on new contractor data.

Support: Revised Initial Spares and Other Weapon Systems due to quantity changes and addition of surcharge. Adjusted Total Package Fielding (TPF) and New Equipment Training (NET) costs FY 98 - 11. Increase due to funds transfer from OMA to OPA for PM salaries and operating costs. Corrected previous cost variance changes miscategorization. Current and Prior Inflation offsets. Revised Initial Spares estimate based on reduced quantities. Revised Other Weapon Systems estimate based on reduced quantities.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	+0.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.9
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.2
Reduced funding due to deletion of JTIDS program (Estimating)	-55.2	-77.7
RDT&E Subtotal	<u>-55.4</u>	<u>-74.8</u>

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

(Dollars in Millions)
Base-Year Then-Year

(2) Procurement

Revised escalation indices. (Economic)	N/A	-5.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+40.9
Adjustment for Current & Prior Inflation. (Estimating)	+2.3	+4.9
Total Variance associated with increase of NCS-E from 8 to 15 units.	+4.6	+7.2
Increased funds for procurement of additional 7 NCS-E downsized units in FY 96. (Quantity)	+6.3	+10.0
Estimating Variance resulting from Quantity Allocation. (Estimating)	-1.7	-2.8
Funding increase due to EPLRS program restructure and revised fielding posture. (Estimating)	+11.2	+29.4
Deleted JTIDS Class 2M Terminal program. (Estimating)	-30.8	-77.4
Adjustment to funding profile due to EPLRS restructured and compressed program to FY99 vs. FY01. (Estimating)	-22.1	-64.4
Adjustment for Current & Prior Inflation. (Support)	+0.7	+0.7
Revised estimate for Initial Spares. (Support)	--	+0.1
Revised estimate for Other Weapons Systems Cost. (Support)	-0.2	-2.4
Procurement Subtotal	-34.3	-66.7

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
35.74	-8.08	2.62	20.05	-16.04	15.87	--	-17.08	-2.66	33.09

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

a. Procurement --

<u>EPLRS LRIP:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
HUGHES AIRCRAFT COMPANY, FULLERTON, CA				
DAABO7-83-C-J031, FPI	\$2.7	\$3.1	0	
Award: February 1, 1988				
Definitized: February 1, 1988				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$285.0	\$321.9	8	\$245.7	\$246.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$4.9	\$-5.6
Cumulative Variances To Date (01/27/95)	\$5.5	\$-2.9
Net Change	\$0.6	\$2.7

Explanation of Change:

The improvement in Cost and Schedule Variances were the result of the continued intensive management effort by PM ADDS and Hughes Aircraft Company to control and monitor the EPLRS LRIP contract.

"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: 78.9% (15 yrs/19 yrs)
- (2) Percent Program Cost Appropriated: 93.2% (\$709.0 / \$761.1)

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

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

<u>Appropriation</u>	<u>Prior Years (FY81-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-99)</u>	<u>Total</u>
RDT&E	257.5	1.9	-	-	259.4
Procurement	451.5	24.2	13.0	13.0	501.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	709.0	26.1	13.0	13.0	761.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1981				17.0	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	4.0
1984				21.6	22.9	22.9	22.9	3.8
1985				21.9	23.9	23.9	23.9	3.4
1986				32.0	36.0	36.0	36.0	2.8
1987				32.8	38.0	38.0	38.0	2.7
1988				18.0	21.7	21.7	21.7	3.0
1989				8.4	10.5	10.5	10.5	4.2

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1990				2.7	3.5	3.5	3.5	4.1
1991				2.3	3.1	3.1	3.1	4.3
1992				4.4	6.1	6.1	6.1	3.0
1993				5.3	7.6	7.1	6.5	2.7
1994				10.1	14.7	14.0	10.0	2.0
1995				1.5	2.3	1.0		2.7
1996				1.2	1.9			3.0
Subtot	8			230.1	259.4	255.0	249.4	

One (1) of the three (3) original EDMs was refurbished and delivered.
Additional seven fully configured NCS-E Downsized were developed and
have been delivered to the government.

Current RDT&E NCS-E assets: 2 non-fully configured (EDM - Fullsized)
1 refurbished and fielded (EDM-Fullsized)
7 fully configured for fielding (Downsized)

Appropriation: 2035 Other Procurement, Army

1986		2.9	5.7	18.2	21.1	21.1	21.1	2.8
1987		15.9	33.3	61.1	73.5	73.5	73.5	2.7
1988	4	20.7	64.2	94.8	118.8	118.8	118.6	3.0
1989	4	6.8	52.0	62.7	82.0	82.0	72.1	4.2

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ADDS (EPLRS), December 31, 1994

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1990								
1991			6.3	6.4	8.9	8.9	8.5	4.3
1992			29.7	31.0	44.3	44.3	42.5	3.0
1993		0.5	32.6	36.2	53.0	53.0	22.7	2.7
1994		0.5	21.7	26.9	40.4	36.9	10.5	2.0
1995		0.3	3.9	6.1	9.5	4.2		2.7
1996	7	0.3	9.1	15.3	24.2			3.0
1997		0.4	4.2	8.0	13.0			3.0
1998			2.8	5.4	9.1			3.0
1999			2.2	2.3	3.9			3.0
Subtot	15	48.3	267.7	374.4	501.7	442.7	369.5	
Grand Total	23	48.3	267.7	604.5	761.1	697.7	618.9	

Flyaway Costs are reported by year based on procuring the many components of the ADDS, not just the unit of measure (See Section 12b). Obligation and Expenditure data were derived from Finance and Accounting reports as of 31 December 1994.

The JTIDS Terminals, including the Army Class 2M, are accounted for in the SAR prepared by the Joint Program Office for JTIDS. USAF (Hanscom AFB) maintains the SAR, APB and DAES. All costs associated with the Army JTIDS Class 2M Terminal program have been deleted from the ADDS SAR and APB.

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ADDS (EPLRS), December 31, 1994

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

	<u>To Date</u>
RD&E	10/10
Procurement	8/8

One of the three (3) original RD&E EDMs Fullsized assets was refurbished and delivered. The other two (2) EDMs remain non-fully configured units. Additional seven (7) RD&E NCS-E Downsized assets have been developed and delivered to the government in FY 94. All of the eight (8) NCS-E Fullsized production assets under the LRIP contract have been delivered.

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

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The ADDS system definition for unit equivalent is 23 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.

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ADDS (EPLRS), December 31, 1994

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

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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	---	1.5	8.1	9.6
Total	---	---	1.5	8.1	9.6

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N-15 LAMPS MK III BLK II
(SH-60R)

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(OSA)823)

PROGRAM: SH-60R

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
SH-60R Multi-Mission Helicopter Upgrade

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
Air ASW, and Special Mission Progra CAPT Joseph Haddock, III
(PMA-299) JP-1, Rm 720 Assigned: February 21, 1992
Washington, DC 20361-1299 AV 664-2686 COMM 703-604-2686

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

RDT&E:

PE 0604212N Project H1707, H0485

PROCUREMENT:

APPN 1506 ICN 018200 (Navy)

5. (U) Related Programs:

Airborne Low Frequency Sonar (ALFS)

No Security Objection to Open Publication
(AS AMENDED)

95-C-0341
MAR 28 1995
Ann S. Anderson
Officer in Charge of
Naval Operations Dept. of the Navy

CLEARED
FOR OPEN PUBLICATION

RE-AMENDED
MAR 28 1995

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

95-C-0889

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SH-60R, December 31, 1994

6. (U) Mission and Description:

The Multi-Mission Helicopter Upgrade (formally called LAMPS MK III Block II Upgrade) is a development program which will bring critical capability improvements to the SH-60B/F helicopters which are essential to future tactical rotary-wing effectiveness in providing battlegroup protection in achieving coastal littoral battlespace dominance. The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and adds significant capability in coastal littoral and regional conflicts. The Block II Upgrade entered Engineering and Manufacturing Development (EMD) in FY93 and represents a significant avionics modification to the SH-60B greatly enhancing both primary mission areas of Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW). The Airborne Low Frequency Sonar (ALFS) will be added to enhance the existing acoustic suite. ASuW effectiveness will be improved with the addition of a multi-mode radar which includes an inverse synthetic aperture radar mode to permit stand-off classification of hostile threats. An improved Electronic Surveillance Measures (ESM) system will enable passive detection and targeting of radar sources not detectable with the current system. Aircrew and aircraft survivability in hostile environments will be significantly improved through software integration of the self-defense equipments. Provisions for a tactical data transfer system to improve platform interoperability by rapid, secure transfer of mission information between multiple air and surface units is included in the upgrade.

The ALFS program develops a low frequency sonar and increases sonobuoy processing capability for the SH-60 helicopter to maintain and improve undersea warfare mission effectiveness against the quiet submarine threat in deep and shallow water environments. This project provides a dipping sonar with demonstrated deep water capabilities typically 3 to 6 times (square miles of ocean searched per hour) greater than the current in-service helicopter sonar. This improvement will significantly increase battle group and independent ship protection providing improved survivability and operating flexibility. ALFS provides longer detection ranges and a greater detection capability by using lower frequencies, less signal attenuation, longer pulse lengths, improved processing and increased transmission power. ALFS utilizes the Enhanced Modular Signal Processor, designated UYS-2A, for improved sonobuoy processing capability.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
A Tentative Operational Requirement (TOR) for the Block II Upgrade was received in the Naval Air Systems Command (NAVAIRSYSCOM) in May 1986. NAVAIRSYSCOM responded with a Development Options Paper in September of 1986 which listed options for meeting the established

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

requirements and outlined the associated costs. A formal Operational Requirement (OR) for the LAMPS MK III Block II Upgrade was initiated. In April 1987 the Block II OR was revised to include the requirement for dipping sonar. The "Operational Requirements for SH-60B Block II Upgrade" (OR# 209-05-90) was approved in April 1988.

In May of 1988, the RDT&E resource sponsor (OP-03B) was briefed on the upgrade program. The program received approval and commitment for funding support. However, resources available in the FY88 President's Budget were not sufficient to support the Operational Requirement; roughly half of the RDT&E budget required to support development and integration specified in the Operational Requirements.

The OR was again rewritten to respond to the format and requirements of DODINST 5000.2 and include Congressionally directed ESM improvements in 1991. The latest Operational Requirements Document (ORD# 314-03-92) was approved 3 August 1992.

Since December 1990, IBM Federal Sector Division of Owego NY has been under contract to define the air vehicle and mission avionics systems required to meet the Navy's requirements. A structured systems engineering process has been implemented to identify requirements, flow them down into system, subsystem, prime item and critical item specifications, allocate the requirements to hardware and software critical items, perform industry surveys, trade studies, performance analysis, identification of promising technologies, risk identification and mitigation, and cost-benefit analysis of performance criteria. In addition, IBM has performed competitions for all subsystems whose requirements could not be met by current fielded equipment. IBM Federal Sector Division was subsequently acquired by Loral Federal Systems in March 1994.

Following the approval of an operational requirement for an advanced lightweight sonar in 1985, technology demonstrations of advanced developmental models were conducted in 1988 and 1989. A development contract was awarded to Hughes Aircraft Company in 1991 and system level Critical Design Review (CDR) was completed in August 1993. Design verification testing was completed at Lake Seneca in 1994 with first delivery of the prototype units scheduled in FY95. TECHEVAL and OPEVAL will be conducted on an SH-60R in FY98.

b. (U) Significant Developments Since Last Report --
This is the initial SH-60R SAR.

This system is expected to satisfy all mission requirements.

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

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

8. (U) Threshold Breaches:

The Acquisition Program Baseline is in staffing and will be reported in the next SAR. There are no Munn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone II	JUL 93	N/A	JUL 93
EMD Contract Award	JUL 93	N/A	JUL 93
Preliminary Design Review	JUL 95	N/A	JUL 95
Critical Design Review	OCT 96	N/A	OCT 96
LRIP Contract Award	NOV 98	N/A	NOV 98
LRIP First Delivery	JUL 00	N/A	JUL 00
TECHEVAL			
Start	JAN 00	N/A	JAN 00
Complete	JUN 00	N/A	JUN 00
OPEVAL			
Start	SEP 00	N/A	SEP 00
Complete	MAR 01	N/A	MAR 01
Milestone III	OCT 01	N/A	OCT 01
Airborne Low Frequency Sonar			
EMD Contract Award	JAN 92	N/A	JAN 92
Preliminary Design Review	OCT 92	N/A	OCT 92
Critical Design Review	APR 93	N/A	APR 93
TECHEVAL			
Start	FEB 98	N/A	FEB 98
Complete	JUN 98	N/A	JUN 98
OPEVAL			
Start	JUL 98	N/A	JUL 98
Complete	SEP 98	N/A	SEP 98
Milestone III	JAN 99	N/A	JAN 99
Production Contract Award	MAR 99	N/A	MAR 99
Initial Operating Capability	MAR 01	N/A	MAR 01

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

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

d. (U) References --

(U) Development Estimate:

FY 1996/1997 President's Budget

ASN,RDA Acquisition Decision Memorandum dated August 1993.

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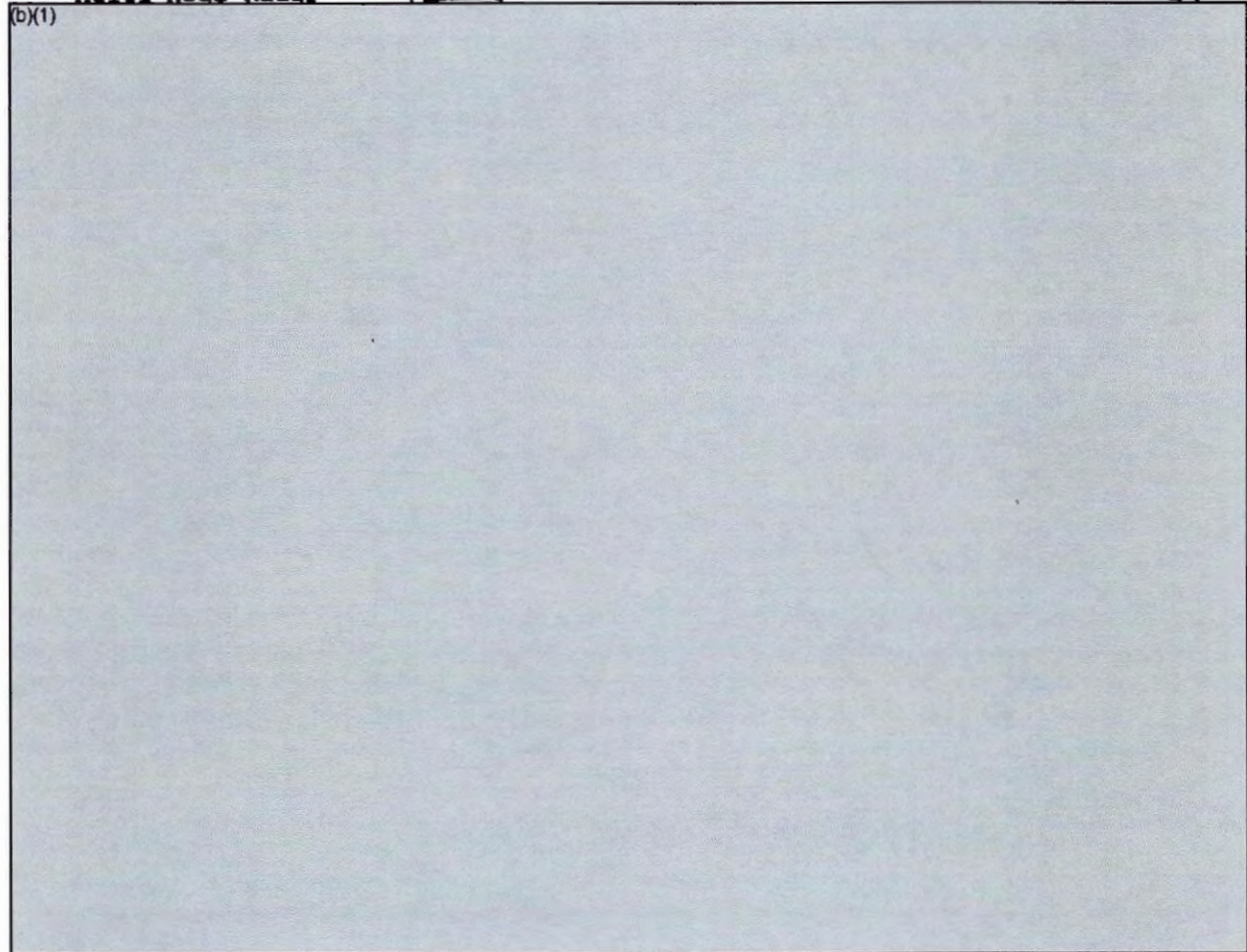
9d. (U) Schedule (Cont'd):

(U) Approved Program: None.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Maximum Operating Sea State	5	N/A / N/A	TBD	5
Mission Duration (ASW) (hrs)	3.3	N/A / N/A	TBD	3.3
Mission Duration (ASUW) (hrs)	3.5	N/A / N/A	TBD	3.5
Multi-Mode Radar				

(b)(1)



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

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

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

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

d. (U) References --

(U) Development Estimate:

FY 1996/1997 President's Budget

ALFS ORD #295-05-92 dated December 1991

Block II ORD #314-03-92 dated August 1992

(U) Approved Program: None.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	508.4	0.0	508.4
Procurement	3512.1	0.0	3512.1
Airframe/CFE	(2119.0)		(0.0)
GFE	(435.7)		(0.0)
Nonrecurring flyaway	(150.6)		(0.0)
Total Flyaway	(2705.3)		(2705.3)
Pubs	(40.0)		(0.0)
Weapon System	(5.6)		(0.0)
Field Activities	(165.5)		(0.0)
ILS/LSA/MES	(79.2)		(0.0)
Total Other Wpn Sys	(290.3)		(290.3)
Peculiar Support	(238.9)		(238.9)
Initial Spares	(277.6)		(277.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 93 Base-Year \$	4020.5	0.0	4020.5
Escalation	1615.9	0.0	1615.9
Development (RDT&E)	(40.3)	(0.0)	(40.3)
Procurement	(1575.6)	(0.0)	(1575.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	5636.4	0.0	5636.4
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>188</u>	<u>N/A</u>	<u>188</u>
Total	188	N/A	188

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
FY96/97 President's budget dated February 1995.

(U) Approved Program: None.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 94 SAR)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY93\$)	4020.5	0.0	
(2) Quantity	188	N/A	
(3) Unit Cost	21.386	N/A	N/A
b. (U) Procurement			
(1) Cost (BY93\$)	3512.1	0.0	
(2) Quantity	188	N/A	
(3) Unit Cost	18.681	N/A	N/A

Awaiting approval of Acquisition Program Baseline.

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13. (U) Cost Variance Analysis:

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

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	548.7	5087.7	0.0	5636.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	548.7	5087.7	-	5636.4

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SH-60R, December 31, 1994

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

a. (U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	508.4	3512.1	0.0	4020.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	508.4	3512.1	-	4020.5

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

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

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SH-60R, December 31, 1994

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes							PAUC (Current Est)	
	Econ	Qty	Sch	Eng	Est	Other	Spt		Total
29.981	--	--	--	--	--	--	--	--	29.981

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

a. (U) RDT&E --

(U) Development (ALPS):

Hughes Aircraft Company, Fullerton, CA
N00019-92-C-0001, CPIF
Award: December 31, 1991
Definitized: December 31, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$31.4	\$0.0	4

Current Contract Price		
Target	Ceiling	Qty
\$52.1	\$0.0	4

Estimated Price At Completion	
Contractor	Program Manager
\$62.1	\$66.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/94)	\$12.6	\$2.9
Net Change	\$12.6	\$2.9

Explanation of Change:

The cumulative variance is due to design refinements in the Sonar Transmitter Receiver (STR) which resulted from in-water and integration testing. Additional costs have been incurred as a result of increased management oversight during the Factory Acceptance Test (FAT) phase (i.e. international travel) and additional engineering effort to finalize acceptance test procedures.

(U) Development (Block II):

LORAL, Owego, NY
N00019-93-C-0196, CPFF
Award: August 23, 1993
Definitized: December 22, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$242.0	\$0.0	2

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$266.1	\$0.0	2	\$266.1	\$266.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

Contract rebaseline effective 22 Dec 94, cost and schedule variance data will be available in the next SAR.

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: 5.4% (\$305.4 / \$5636.4)

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

<u>Appropriation</u>	<u>Prior Years</u> (FY90-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2011)	<u>Total</u>
RD&E	305.4	66.3	42.0	135.0	548.7
Procurement	-	-	-	5087.7	5087.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	305.4	66.3	42.0	5222.7	5636.4

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SH-60R, December 31, 1994

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

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				11.1	10.3	10.3	10.1	4.0
1991				29.6	28.5	28.5	27.7	4.3
1992				53.6	53.2	53.0	50.8	2.8
1993				71.9	73.1	73.0	71.4	2.7
1994				67.0	69.7	69.6	66.2	2.0
1995				66.0	70.6	55.8		2.7
1996				60.2	66.3			3.0
1997				37.0	42.0			3.0
1998				46.6	54.5			3.0
1999				35.0	42.1			3.0
2000				14.8	18.3			3.0
2001				11.8	15.1			3.0
2002				3.8	5.0			3.0
Subtot				508.4	548.7	290.2	226.2	

Appropriation: 1506 Aircraft Procurement, Navy

1998				80.3	96.6			3.0
------	--	--	--	------	------	--	--	-----

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SH-60R, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

1999	4	150.6	56.4	249.6	309.2			3.0
2000	15		203.7	280.8	358.3			3.0
2001	15		203.7	309.5	406.8			3.0
2002	15		203.9	272.7	369.2			3.0
2003	19		258.0	321.8	448.8			3.0
2004	20		271.5	335.4	481.7			3.0
2005	20		271.5	335.3	496.1			3.0
2006	20		271.5	327.6	499.2			3.0
2007	20		271.5	326.5	512.5			3.0
2008	20		271.5	325.4	526.0			3.0
2009	20		271.5	279.3	465.0			3.0
2010				34.3	58.9			3.0
2011				33.6	59.4			3.0
Subtot	188	150.6	2554.7	3512.1	5087.7			
Grand Total	188	150.6	2554.7	4020.5	5636.4	290.2	226.2	

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SH-60R, December 31, 1994

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

O&S costs are unavailable at this time and will be reported in the next SAR.

- b. (U) Costs -- None.

O&S costs are unavailable at this time.

- c. (U) Contractor Support Costs -- None.

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~~SECRET~~

N-22 MK 50 TORPEDO

~~***SECRET***~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(08A)823)

PROGRAM: MK 50 TORPEDO

AS OF DATE: December 31, 1994

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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:

LIGHTWEIGHT TORPEDO PROGRAM OFFICE CAPT GARY S. NELSON

PEO, UNDERSEA WARFARE

Assigned: July 1, 1993

PMO 406 Crystal Park One, Room 1102 AV 286-3020 COMM (703) 746-2020

WASHINGTON, DC 20362-5101

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

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAR 29 1995 2

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DASS-PA)
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95-C-0306
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Office of the
Naval Operations
Dept. of the Navy

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~~Downgrade Instructions: OADR~~

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5. (U) Related Programs:

LAMPS MK III; CV HELLO; 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 the first of a series of 158 planned test firings, and was scheduled

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

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 and on 7 January 1992 PEO-SSAS (now PEO-USW) recertified MK-50 for OPEVAL Phase II. OPEVAL testing was successfully completed in June 1992 and the OPEVAL report was issued in August of that year. The significant reduction in procurement funding in 1992 and beyond was the direct result of the decision made by the Navy to terminate the MK 50 Torpedo production program at a greatly reduced inventory level based on changing world conditions. The reduction of the program's original inventory objective by over 85% caused the quantities procured under LRIP to exceed the 10% threshold for planned buys (new inventory objective). 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 for 246 torpedoes was awarded on a winner-take-all fully competitive basis to Alliant Techsystems in November 1992. The Milestone IIIB Defense Acquisition Board/Conventional Systems Committee decision, due prior to the FY 93 contract award, was waived by USD(A) by memorandum on 7 April 1993 based on the elimination of any further planned procurements. The FY 93 procurement to build 212 torpedoes was awarded on a winner-take-all fully competitive basis to Westinghouse Electric Corporation on 9 September 1993. Alliant Techsystems, Inc., the disappointed offeror, took civil action in United States District Court on 23 September 1993 to have a permanent injunction placed against the award; the Navy's action of awarding the contract to Westinghouse was upheld in Federal Court on 19 November 1993.

b. (U) Significant Developments Since Last Report --

The MK 50 continues to undergo FOT&E software development and testing designed to correct previous OPEVAL deficiencies. OPEVAL was originally scheduled to take place in two phases; late fiscal year 1994 and late fiscal year 1995. This schedule was consolidated to reduce testing costs. OPEVAL, under COMOPTEVFOR control, of FOT&E software is now scheduled for late fiscal year 1995 (Jul-Sep 95). Congressional approval of the FY95 Defense Appropriation Act allows

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

for the payment of outstanding FY87 contractual target to ceiling growth with FY95 Weapons Procurement, Navy appropriation funds. This is the final SAR for the MK 50 Torpedo program based on 90 percent expenditures.

c. (U) Changes Since As Of Date --

In a letter from the CNO to the Naval Sea Systems Command dated 16 February 1995, authority was granted to make upward obligation adjustments to Alliant Techsystems, Inc. and Westinghouse Electrical Corporation LRIP I contracts to liquidate outstanding deficiencies in FY87 WPN account for the MK 50 program. Contract modifications are anticipated to be completed by the end of March 1995.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 22 February 1994. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I (DSARC I)	JUL 79	JUL 79	JUL 79
D&V Contract Award	N/A	AUG 79	JUL 79
DT/OT-I Completed	N/A	JUL 83	JUL 83
Milestone II (DSARC II)	DEC 83	JAN 84	JAN 84
FSD Contract Award	AUG 83	SEP 83	SEP 83
Critical Design Review	APR 86	MAY 88	MAY 88
Milestone III A (DAB)	OCT 86	FEB 89	MAR 89
LRIP 2nd Year Approval	N/A	FEB 90	FEB 90
OT II Completed	DEC 88	JUN 92	JUN 92
Milestone III B (DAB)	APR 89	N/A	N/A
Initial Operational Capability	N/A	OCT 92	OCT 92
Organic Support Capability	N/A	N/A	N/A
Service Depot Support Date	N/A	N/A	N/A
Full Operational Capability	N/A	N/A	JAN 99

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

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

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 increase in development testing to ensure that a vigorously tested, reliable torpedo design existed before entering production. A delay in completion of DT-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 achieved IOC on 27 October 1992.

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.

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 1991 to October 1992 reflects the actual date of approval for introduction of the MK 50 Torpedo for fleet use.

The APB released by USD(A) on 22 February 1994 reflects the changes described above.

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

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 February 22, 1994.

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10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
-----------------------	----	---	----------------------------------	----------------------------

(S) Acoustic Acquisition
Range (yds) - 50%
Probability of
Acquisition

(b)(1)



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MK 50 TORPEDO, December 31, 1994

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

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Maximum Length (in) with Air Launch Accessories, less Nose cap	115.5	115.5 / 115.5	115.5	115.5
Maximum Weight (lb) with Air Launch Accessories, less Nose Cap	798	798 / 798	783	798
Maximum Diameter (in)	12.75	12.75 / 12.75	12.75	12.75
Probability of Hit Scenarios U.S. Submarines and Artificial Targets				
(b)(1)				
Environment				
No CM				

(b)(1)

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

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
U (C) Acceptance Rate For Storage Breakout (%)	.90	.90 / .90	TBD	.90
U (C) MTBF Auxiliary Equipment (hrs)	175	175 / 175	215	215 (Ch-1)
U (C) IMA Torpedo Turnaround Time, Maximum (Manhours/hrs)	50/24	50/24 / 50/24	107/109	50/24

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

	DE	Approved Program <u>Objective/Threshold</u>		Demon- strated Perf	Current Estimate
U (S) Organizational Maintainability	N/A	No Internal Access Assembly & Dis-assembly of Accessories only	/ No Internal Access Assembly & Dis-assembly of Accessories Only	No Internal Access Assembly & Dis-assembly of Accessories only	No Internal Access Assembly & Dis-assembly of Accessories only

U ~~(S)~~ Entries for demonstrated performance figures are based on the latest test results available through the completion of TECHEVAL and OPEVAL (Phase I and Phase II). These figures have been reviewed and approved by COMOPTEVFOR and are included in the MK-50 TORPEDO Test and Evaluation (T&E) Data Sheets and Congressional Data Sheets.

b. (U) Previous Change Explanations --

U ~~(S)~~ The change in IMA maintenance turnaround time from 70/48 to 50/24 reflected a change in the parameters for measurement of maintenance turnaround time. The 70/48 estimate was based on early TECHEVAL data; subsequent information indicates that the original estimate of 50/24 is still valid and was included in the original contract as a design specification. This parameter reflects wrench-on maintenance time only which does not represent the manner in which we actually measure IMA performance. A proposed change to the baseline, which will add a new parameter called IMA System Process Time, was submitted in the January 1992 PDR/BCR which OSD returned due to the dramatic change in the program. This new parameter is more reflective of the way we actually measure IMA performance and includes all logistics delays.

(b)(1)

(U) The change in length from 111.5 to 115.5 inches and the change in weight from 748 to 783 pounds represent more accurate measurements of the torpedo with air launch accessories fitted.

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10b. ~~(S)~~ Performance Characteristics (Cont'd):

U ~~(S)~~ (C) MTBF changed from 175 hrs to 104.4 based on test set #2 used in both OPEVAL Phase I and Phase II. Test set #1, used in OPEVAL Phase I only, had an MTBF of 28.9 hrs.

U ~~(S)~~ IMA turnaround times changed from 28/22 to 107/109 based on OPEVAL data and is reflective of a new parameter which will be incorporated in the baseline via the forthcoming revised PDR/BCR.

(b)(1)

Note 1: Performance figures for Soviet submarines were derived from the NOSC Hybrid Simulator. These figures were questioned by COMOPTEVFOR and were considered invalid for performance measurement purposes due to some of the actual in-water test results. These figures have been deleted from the Congressional Data Sheet's at COMOPTEVFOR's direction.

c. (U) Current Change Explanations --

U ~~(S)~~ U ~~(S)~~ (CH-1) MTBF changed from 175 hrs to 215 hours based on actual data received from the MK644 MTBF system level test sets conducted at the end of OPEVAL through September 94. Improvements were attributed to better Preventive Maintenance System (PMS), connector improvements, and corrected rate table problems.

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 February 22, 1994.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1309.5	1743.0	1750.8
Procurement	4228.4	1330.4	1315.2
Sailaway	(3487.4)		(808.7)
Other Wpn Sys Cost	(453.1)		(459.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(287.9)		(47.4)
Construction (MILCON)	10.4	22.5	22.8
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	5548.3	3095.9	3088.8
Escalation	1105.4	-72.8	-68.8
Development (RDT&E)	(-142.6)	(-224.5)	(-221.4)
Procurement	(1249.5)	(151.6)	(152.8)
Construction (MILCON)	(-1.5)	(0.1)	(-0.2)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6653.7	3023.1	3020.0
b. (U) Quantity --			
Development (RDT&E)	108	108	108
Procurement	<u>7743</u>	<u>1073</u>	<u>1073</u>
Total	7851	1181	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 February 22, 1994.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY89\$)	3088.8	3095.9	
(2) Quantity	1181	1181	
(3) Unit Cost	2.615	2.621	-0.229
b. (U) Procurement			
(1) Cost (BY89\$)	1315.2	1330.4	
(2) Quantity	1073	1073	
(3) Unit Cost	1.226	1.240	-1.143

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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	1166.9	5477.9	8.9	6653.7
Previous Changes:				
Economic	-5.6	-91.2	+2.6	-94.2
Quantity	+26.5	-4698.0	+21.2	-4650.3
Schedule	+159.0	+1682.3	-2.0	+1839.3
Engineering	+46.8	+5.5	-	+52.3
Estimating	+55.0	-504.0	-11.5	-460.5
Other	-	-	-	-
Support	+68.8	-390.5	+3.4	-318.3
Subtotal	+350.5	-3995.9	+13.7	-3631.7
Current Changes:				
Economic	-0.4	-1.1	-0.1	-1.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	12.0	-	-	+12.0
Estimating	0.4	1.4	0.1	+1.9
Other	-	-	-	-
Support	-	-14.3	-	-14.3
Subtotal	+12.0	-14.0	-	-2.0
Total Changes	+362.5	-4009.9	+13.7	-3633.7
Current Estimate	1529.4	1468.0	22.6	3020.0

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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	-2890.0	+17.3	-2845.6
Schedule	+161.6	+1032.6	+0.6	+1194.8
Engineering	+46.1	+4.4	-	+50.5
Estimating	+132.7	-826.9	-8.9	-703.1
Other	-	-	-	-
Support	+64.5	-224.1	+3.3	-156.3
Subtotal	+432.0	-2904.0	+12.3	-2459.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	8.9	-	-	+8.9
Estimating	0.4	1.2	0.1	+1.7
Other	-	-	-	-
Support	-	-10.4	-	-10.4
Subtotal	+9.3	-9.2	+0.1	+0.2
Total Changes	+441.3	-2913.2	+12.4	-2459.5
Current Estimate	1750.8	1315.2	22.8	3088.8

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. Software up-grade program to improve performance of

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

torpedo in shallow water environment.

Estimating: Change to "True" FY 84 Constant \$ and general reduction by House Appropriations Committee. Addition of P31 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.

Quantity: Quantity Variance resulting from the decrease of 6670 units in 1992.

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.

Engineering: Environmental Engineering to support hazardous material disposal.

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. Change (positive) resulting from large quantity reduction of 6670 units in 1992. Decrease in estimates of FY92 and FY93 procurement costs. Increased estimate of contractor support services and decreased estimate of costs for contractual equitable adjustments.

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

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

years.

Support cost rose due to revised work breakdown structure and transfer of certain cost elements from swimaway to support.

FY94 Defense Appropriations Act addition for major sub-assembly spares procurements.

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)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-0.4
Software upgrades to improve shallow water performance; to include developmental and operational testing. (Engineering)	+8.9	+12.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+0.4
RDT&E Subtotal	<u>+9.3</u>	<u>+12.0</u>
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-2.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.5
Adjustment for Current & Prior Inflation. (Estimating)	+1.2	+1.4
Adjustment for Current & Prior Inflation. (Support)	+1.1	+1.4
FY 96/97 President's Budget reprogramming of a portion of the FY94 Defense Appropriation Act addition for major sub-assembly spares procurement. (Support)	-11.5	-15.7
Procurement Subtotal	<u>-9.2</u>	<u>-14.0</u>

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

(Dollars in Millions)
Base-Year Then-Year

(3) MILCON

Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1

MILCON Subtotal	+0.1	--
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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

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

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 SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.847	-0.081	0.850	1.557	0.054	-0.388	--	-0.282	1.710	2.557

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

a. (U) Procurement --

(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:

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

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 remains 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 V: Westinghouse Elec. Corp., Cleveland, OH N00024-93-C-6117, FFP Award: September 9, 1993 Definitized: September 9, 1993	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$71.1	N/A	212

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$71.1	N/A	212	\$71.1	\$71.1

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 Westinghouse Electric Corporation in a competition between Westinghouse and Alliant Techsystems, Inc. Performance under the contract has not started to deliver, but there remains no reason to believe the contractor's 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: 84.0% (21 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 99.6% (\$3008.0 / \$3020.0)

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

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

<u>Appropriation</u>	<u>Prior Years (FY75-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-99)</u>	<u>Total</u>
RDT&E	1517.4	3.0	3.0	6.0	1529.4
Procurement	1468.0	-	-	-	1468.0
MILCON	22.6	-	-	-	22.6
O&M	-	-	-	-	-
Total	3008.0	3.0	3.0	6.0	3020.0

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obl1- gated	Ex- pended	

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
1977				6.0	3.1	3.1	3.1	2.9
1977				33.5	17.8	17.8	17.8	2.6
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

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

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblig- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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	173.0	2.7
1988				142.6	140.0	140.0	140.0	3.0
1989				133.1	136.2	136.2	136.2	4.2
1990				59.4	63.3	63.3	63.3	4.0
1991				43.1	47.6	47.6	43.9	4.3
1992				10.6	12.0	12.0	11.9	2.8
1993				7.6	8.8	8.8	8.8	2.7
1994				13.3	15.8	15.4	0.6	2.0
1995								2.7
1996				2.4	3.0			3.0
1997				2.3	3.0			3.0
1998				2.2	3.0			3.0
1999				2.2	3.0			3.0
Subtot	108			1750.8	1529.4	1517.0	1498.4	

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

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1507 Weapons Procurement, Navy

1987				66.9	66.2	66.2	66.2	2.7
1988	10	17.2	42.2	118.2	121.6	121.6	121.6	3.0
1989	140	13.8	165.0	201.8	215.7	215.7	215.7	4.2
1990	200		141.6	248.5	274.9	270.7	259.2	4.0
1991	265		216.2	293.4	333.0	327.7	316.3	4.3
1992	246		119.1	199.9	233.0	230.6	148.7	2.8
1993	212		85.8	155.1	185.0	178.1	94.9	2.7
1994		7.8		28.9	35.4	6.1	1.1	2.0
1995				2.5	3.2			2.7
Subtot	1073	38.8	769.9	1315.2	1468.0	1416.7	1223.7	

Appropriation: 1205 Military Construction, Navy

1982				10.6	8.9	8.9	8.9	7.6
1983								4.9
1984								3.8
1985								3.4
1986								2.8
1987								2.7

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

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1988								3.0
1989				3.7	3.9	3.9	3.9	4.2
1990								4.0
1991								4.3
1992				8.5	9.8	5.0	4.1	2.8
Subtot				22.8	22.6	17.8	16.9	
Grand Total	1181	38.8	769.9	3088.8	3020.0	2951.5	2739.0	

17. (U) Production Rate Data:

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

	<u>To Date</u>
RD&E	108/108
Procurement	655/697

RD&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, II, and III torpedoes have been delivered as of February 1995.

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

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

	(Average Unit Flyaway Cost) Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 1000 - @ Peak Rate: 83.0/mo			
FY 89 Base-Year \$	0.400	1.226	1.426
Then Year \$	0.500	1.368	1.588
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 89 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

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-96 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.

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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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	1.2	0.2	0.2	3.8	5.4
Total	1.2	0.2	0.2	3.8	5.4

No changes are planned for the CSS structure in support of the O&S phase of the program.

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

PROGRAM: C-17

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

C-17A Globemaster III

SAF/PAS

2. DoD Component: USAF

95-158 -7

3. Responsible Office and Telephone Number:

C-17 SYSTEMS PROGRAM OFFICE
AERONAUTICAL SYSTEMS CENTER
2600 PARAMOUNT PLACE
FAIRBORN, OH 45324-6766

B/GEN RONALD T. KADISH
Assigned: October 1, 1993
AV 785-1545 COMM 513-255-1545

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604227F (Shared) Project 663282
PE 0604231F
PE 0604609F (Shared) Project 663263 (Shared)

PROCUREMENT:

APFN 3010 ICN C017AD (Air Force)

MILCON:

PE 0401130F

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FOR OPEN PUBLICATION

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

5. Related Programs:

Non-Development Airlift Aircraft Program.

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,

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CATSD (PA) DFOISR 95-c-0550

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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 displays that reduce complexity and improve reliability; maximum use of built-in test 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 placed increased emphasis on strategic airlift capability. The initial C-X Program Management Directive (PMD) was issued on 10 Dec 79. The requirements for the C-17A aircraft were formalized by the C-X Mission Element Need Statement, dated 28 Nov 80. In Aug 81, SECAF announced Douglas Aircraft Company (DAC) as the winner of the C-X source selection. (Note: Douglas Aircraft Company - Government Segment (DAC-GS) was renamed McDonnell Douglas Aerospace - Transport Aircraft (MDA-TA) in Oct 92.)

On 23 Jul 82, the Full Scale Engineering Development (FSED) contract was awarded to Douglas Aircraft Company (DAC). A revised PMD was issued in Jul 83 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.

In Jan 88, the first competitively-priced production option for two

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7a. Program Highlights (Cont'd):

aircraft was exercised, along with long lead for the second production option for four aircraft. Assembly start for the first test aircraft occurred at Douglas Aircraft Company (DAC), Long Beach, on 24 Aug 88. Milestone IIIA approval was received on 18 Jan 89 for the next two lots of C-17s.

On 21 Dec 90, DAC completed the assembly of the T-1 aircraft, a major program milestone and prerequisite for the award of the next production contract. The C-17 FSED aircraft (T-1) Flight Test Program was initiated with the accomplishment of T-1 first flight on 15 Sep 91 to the Air Force Flight Test Center (AFFTC), Edwards AFB, California.

Four C-17 aircraft (P-1 through P-4) were delivered to the Air Force Flight Test Center between May and Dec 1992. Five additional C-17 aircraft (P-5 through P-9) were delivered to the Air Force between Jan and Dec 93. P-5 entered the flight test program at Edwards AFB to help accelerate completion of avionics testing requirements.

Both static load testing and durability testing for full-scale C-17 structural airframes were initiated in 1992. Because of a static wing failure during testing in Oct 92, the static test program was restarted with the successful completion of the first ultimate (150%) wing load test condition in Jul 93. Full scale durability testing completed 24,658 hours of the required 30,000 hours (one lifetime).

On 30 Apr 93, the Under Secretary of Defense for Acquisition convened a special Defense Acquisition Board (DAB) C-17 program review. The Under Secretary assigned action items to be accomplished, including the requirements in the FY93 National Defense Authorization Act and reviews of a Cost and Operation Effectiveness Analysis, the Joint Requirements Oversight Council on requirements, and the Cost Analysis Improvement Group (CAIG) on affordability. A second DAB review concluded on 8 Nov 93 and a Milestone IIIB decision was scheduled for Nov 95. In the interim, the procurement of 40 aircraft was considered an appropriate number to evaluate whether program cost, schedule and performance warrant completing the 120 aircraft buy. An assessment of airlift alternatives to the C-17 will be jointly considered at the Milestone IIIB decision. As a result of Acquisition Decision Memorandum direction which reduced procurement quantity from 120 to 40, total acquisition cost must be divided by 40; the unit cost increase exceeded the 15% threshold. A Nunn-McCurdy breach was declared in the 31 Dec 93 SAR.

In Jun 93, the C-17 Integrated Weapon System Management concept of operations, which implements the Air Force's Single Manager concept,

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7a. Program Highlights (Cont'd):

was approved by the Assistant Secretary of the Air Force for Acquisition.

As a result of recent Defense Science Board (DSB) recommendations and DAB results, the C-17 System Program Office (SPO) and MDA have implemented a new management plan for the C-17 program under the auspices of an Integrated Master Plan (IMP). Integrated Product Development will use Integrated Product Teams (IPTs). IPTs will manage the program and concentrate on achieving three key program goals: (1) Initial Operational Capability (IOC); (2) Reliability, Maintainability and Availability Evaluation (RMAAE); and (3) Milestone IIIB.

b. Significant Developments Since Last Report --

On 6 Jan 94, the settlement agreement resolving claims and program disputes was signed by the Under Secretary of Defense for Acquisition and Technology (USD(A&T)) and McDonnell Douglas Aerospace (MDA). During the year, two Defense Science Board Task Force reviews were held. The first review of the settlement implementation plan was held at Wright Patterson AFB OH in June. In October, the second review held at Long Beach CA concluded preparations to implement the settlement were proceeding as planned. Funding was approved for the settlement in the FY95 Appropriations Act. Settlement certification went to Congress on 5 Dec 94.

A

The final wing ultimate load test case was successfully tested on 31 Jan 94.

During the past year the timeliness of aircraft delivery has markedly improved. Eight aircraft (P10-P17) were delivered during the reporting period between Feb and Dec 94. Since P-13, each airplane was delivered earlier than the required contract delivery date. The quality of each successive aircraft at delivery continues to improve.

Rework and repair hours have decreased 40 percent from the delivery of P-10 to the delivery of P-17.

Initial Squadron Operations (ISO) capability was released to Air Mobility Command (AMC) on 28 Mar 94. This release opened operations to include overseas, air refueling, formation, single-ship low level and increased ground operations.

In Apr 94, flight and ground loads testing was completed at Edwards AFB. All operational fleet loads restrictions were lifted in Dec 94 after analysis was completed.

On 3 Jun 94, the C-17 Globemaster III set its 22nd world record. This record was for Short Take-Off & Landing aircraft carrying the

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7b. Program Highlights (Cont'd):

greatest payload to an altitude of 2000 meters (354,736 pounds, take off and land in less than 1,500 feet).

On 20 Jun 94, Avionics Integration Support Facility (AISF) contract was awarded to MDA. The AISF effort will improve software upgrade capability to support operational flight programs and reduce C-17 life cycle costs. A successful System Design Review (SDR) for the AISF was held on 30 Nov 94.

On 15 Jul 94, Airlift Defensive System safety of flight test was successfully completed at Eglin AFB. The fifth C-17 was retrofit with the defensive system.

In Aug 94, initial aircrew ground training for co-pilots and loadmasters transitioned to Altus AFB OK from Charleston AFB SC. A Weapon System Trainer (WST), which includes a loadmaster station, and a cargo compartment trainer are operational. A cockpit systems simulator is currently being installed.

In Aug 94, during a dual-door personnel airdrop test flight, two paratroopers made contact during descent. They successfully separated from each other and safely completed their jump. The U.S. Army halted participation in dual door jumps until the cause for the entanglement is determined and fully understood. In early Nov 94, an Executive Independent Review Team co-chaired by the Air Force and the Army was chartered to analyze the paratroop entanglement phenomenon. Experts in aerodynamics, data analysis, parachuting, and test and evaluation gathered to collect and review the data. Analysis included comparative airflow, exit timing, and jumper exit trends, with the objective of optimizing the C-17 as a platform for personnel airdrops. Projected completion is Mar 95, with release for operational testing planned for Apr 95.

The C-17 Depot Cost Benefit Analysis was briefed to OSD on 16 Aug 94. The analysis confirmed that a depot support decision prior to the decision on C-17 fleet size is not required nor is it economical. (The exception is specific line replaceable units, for which appropriate depot capability is clearly cost effective.) A system depot support recommendation will be presented within 90 days after the Milestone IIIB decision scheduled for Nov 95. The recommendation will encompass all aspects, including core and legal requirements.

A Should Cost Review for the Lot VIII and beyond production buys began 26 Sep 94. The Should Cost Team has completed data gathering and cost reduction initiative (CRI) writing. Should Cost findings will be used to support negotiation of production contracts.

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7b. Program Highlights (Cont'd):

In Oct 94, the Globemaster III demonstrated operational capability by flying its first two operational missions nonstop from Langley AFB VA to the Persian Gulf in support of the U.S. build up in the region. Both eastbound flights were more than 14 hours. The C-17's carried 80 tons of cargo including outside US Army vehicles.

In Oct 94, the C-17 successfully demonstrated landing, takeoffs and various ground maneuvers utilizing its austere airfield capabilities on unpaved runways at Edwards AFB CA, Bicycle Lake, Ft. Irwin CA and Alamo Airfield, Alamo NV.

A planning Defense Acquisition Board (DAB) was held 2 Nov 94 to review plans for the Nov 95 DAB. A special C-17/NDAA Acquisition Decision Memorandum (ADM) was issued 16 Nov 94. An updated Acquisition Program Baseline (APB) was signed by Office of the Under Secretary of Defense (Acquisition & Technology) on 10 Nov 94. This APB incorporates the program changes implemented by the 6 Jan 94 settlement agreement and contains updated key performance parameters validated by the Joint Requirements Oversight Council.

In Nov 94, Full Scale Durability structure testing completed the 1.5 life-time milestone. Testing will resume in Feb 95 after test article inspections.

On 22 Nov 94, the Program Executive Officer certified the C-17 as ready to begin Dedicated Initial Operational Test and Evaluation (DIOT&E). The decision was made to conduct DIOT&E in phases. Phase I started in Dec 94 to evaluate flight and ground cargo handling characteristics. Phase II commences in Jan 95 to execute full flight operations, except for mass static line paratroop airdrop. The evaluation of paratroop airdrop will begin after completion of the Executive Independent Review Team analysis.

In Dec 94, Live Fire Test was successfully completed on the right wing inboard tank from the C-17 static article.

On 16 Dec 94, the development flight test program formally concluded with the completion of over 5700 total test points. Data analysis and reporting will continue through Mar 95. The program has now begun a follow-on development test program to test enhancements and corrective actions to clean up any issues remaining from the Engineering and Manufacturing Development test program. The primary focus at this time is on the optimization of the C-17 as a personnel airdrop platform.

On 22 Dec 94, McDonnell-Douglas completed initial delivery of the last remaining production aircraft needed for Initial Operational

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7b. Program Highlights (Cont'd):

Capability (IOC). On 28 Dec 94, the contractor returned aircraft P-8 from its retrofit program, thus providing the 437th Air Wing with its twelfth aircraft on station, the number needed for IOC. All other IOC readiness criteria were also met.

This system will satisfy mission requirements.

c. Changes Since As Of Date --

Initial Operation Capability was declared by Air Mobility Command on 17 Jan 95.

P-5 was delivered to Charleston AFB on 17 Jan 95. The addition of P-5 to the wing increased the number of aircraft to 13, one more than required for IOC.

On 2 Feb 95, the funds were released and the contract modifications were signed to execute the 6 Jan 94 Settlement agreement.

On 15 Feb 95, the C-17 Globemaster was awarded the Collier Trophy for the top aeronautical achievement of 1994.

8. Threshold Breaches:

As of the date of this report there are no breaches to the approved Acquisition Program Baseline (APB) dated 10 Nov 94 and no Nunn-McCurdy unit cost breach to the current APB dated 10 Nov 94.

However, the C-17 APB dated 20 Feb 92, which was in effect at the time of the enactment of the Federal Acquisition Streamlining Act (FASTA) reflected a previous Nunn-McCurdy breach declared in the December 1993 SAR. Because an updated APB was still in OSD coordination and not approved until 10 November 1994, the program was technically in breach status from 13 October 1994 until 10 November 1994. The program has been and continues to perform well within the unit cost objectives of the updated APB. In fact, the new program environment created by the C-17 settlement agreement continues to produce significant improvements in cost performance, and the ongoing C-17 Should Cost Review promises to further reduce unit cost. Therefore, this breach is administrative only and is being reported only to remain in strict compliance with the statute. Details of this administrative breach can be found in section 12 of this report.

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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)	JUN 93	JAN 95	JAN 95
Complete DT&E/IOT&E	JUN 93	N/A	N/A
DT&E			
Start	N/A	JUN 91	SEP 91
Complete	N/A	DEC 94	DEC 94 (Ch-1)
IOT&E			
Start	N/A	DEC 94	DEC 94 (Ch-2)
Complete	N/A	JUN 95	JUN 95 (Ch-2)
Full Rate Production Contract Award	N/A	TBD	TBD
RM&AE (Formerly ORE)	N/A	JUL 95	JUL 95
Milestone IIIB	SEP 93	NOV 95	NOV 95
FOC	SEP 01	TBD	TBD (Ch-3)
Depot Support Date	N/A	TBD	TBD (Ch-4)

- Milestone IOC: Reflects delivery of 12th aircraft to initial squadron. Full declaration of IOC was made by HQ AMC/CC on 17 Jan 95 based on the ability to commence operational missions.

- Milestone Full Rate Production Contract Award: Current Estimate is TBD, awaiting the Nov 95 Milestone IIIB decision.

- Milestone FOC: Current Estimate is TBD, awaiting the Nov 95 Milestone IIIB decision.

- Depot Support Date: Current Estimate is TBD. A depot support recommendation will be presented within 90 days after the Milestone IIIB decision scheduled for Nov 95.

b. Previous Change Explanations --

First Flight changed from Jun 91 to Sep 91 based on the actual date of T-1 first flight. IOC changed from Jun 93 to Jan 95 due to a change in IOC definition from P-12 to P-16, delayed delivery schedule, and additional AMC requirements. FOC changed from Sep 01 to May 03 because of the delayed delivery schedule. Milestone IIIB

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9b. Schedule (Cont'd):

changed from Sep 93 to Aug 95 due to delayed delivery schedule, flight test rebaselining, and AFOTEC's finalization of criteria for starting IOT&E. RM&AE changed from Oct 94 to Feb 95 due to the revised contract delivery schedule and the additional AMC requirements.

DT&E Complete changed from Dec 93 to Nov 94, IOT&E Start changed from May 93 to Sep 94, and IOT&E Complete changed from Nov 93 to Mar 95 due to the following reasons: delayed delivery schedule, change in the interpretation of "DT&E Complete" to include completion of all-weather testing, deferred manufacturing work, immature aircraft systems, less than planned flight test efficiency, flight test rebaselining, and AFOTEC's finalization of criteria for starting IOT&E.

RM&AE changed from Feb 95 to Jul 95. Milestone IIIB changed from Aug 95 to Nov 95. FOC changed from May 03 to Sep 98. These dates changed as a result of decisions arising from the DAB process. The 30-day link between IOC and RM&AE was removed, the Milestone IIIB date was changed to Nov 95 at which time a decision will be made whether to continue C-17 production beyond 40 aircraft, and FOC is based on delivery of P-40 versus P-120. (Approved Program Dates changed with the approval of the 40 aircraft Approved Program Baseline dated 10 Nov 94.)

c. Current Change Explanations --

(Ch-1) DT&E Complete date changed from Nov 94 to Dec 94 due to final software release for the Mission Computer and Electronic Flight Control System.

(Ch-2) The IOT&E Start date changed from Sep 94 to Dec 94 and IOT&E Complete date changed from Mar 95 to Jun 95. These changes in IOT&E dates reflect the change in test strategy. On 22 Nov 94, Dedicated Initial Operational Test and Evaluation (DIOT&E) Readiness Certification was provided by the Program Executive Officer to AFOTEC/CC. The decision was made to conduct DIOT&E in phases. Phase I started in Dec 94 to evaluate flight and ground cargo operation. Phase II commences in Jan 95 to execute full flight operations, except for mass static line paratroop airdrop. The evaluation of paratroop airdrop will begin after completion of the Executive Independent Review Team's work in the area.

(Ch-3) FOC current estimate changed from Sep 98 to TBD. FOC cannot be determined until after the Milestone IIIB decision scheduled for Nov 95.

(Ch-4) Depot Support Date was added by the 10 Nov 94 APB. The date

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9c. Schedule (Cont'd):

to accomplish depot support is listed as TBD. A system depot support recommendation will be made within 90 days after the Milestone IIIB decision on C-17 fleet size. Milestone IIIB is scheduled for Nov 95.

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 November 10, 1994.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate	
Maintenance Manhours Per Flying Hour (Air Vehicle)	14.6	N/A	/ N/A	11.78	13.35	(Ch-1)
Mean Time Between Maintenance Inherent (hrs) (MTBMI)	1.69	N/A	/ N/A	1.79	1.95	(Ch-1)
Mean Time Between Maintenance Corrective (hrs) (MTBMC)	.83	.78	/ .75	0.63	0.88	(Ch-1)
Mean Time Between Removal (hrs) (MTBR)	5.37	2.8	/ 2.5	3.38	4.67	(Ch-2)
Mean Manhours to Repair (hrs)	4.51	7.35	/ 7.35	3.70	3.70	
Maximum Take-off Gross Weight (lbs) (TOGW)	580000	N/A	/ N/A	585000	585000	
Maximum Payload (lbs)	172200	N/A	/ N/A	169000	169000	(Ch-3)
Payload at Range (lbs @ 2400 nm)	167006	N/A	/ N/A	N/A	160000	(Ch-4)
Range Unrefueled (nm)	2372	N/A	/ N/A	N/A	2400	(Ch-4)
Landing Field Length (ft)	2541	3,000	/ 3,000	2500	2900	(Ch-5)
Takeoff Field Length (ft)	7370	N/A	/ N/A	N/A	7420	(Ch-6)
Cruise Speed (Mach) (450 KTAS)	.77	N/A	/ N/A	.77	.77	
Backup Capability (% grade)	2	2	/ 1.5	3.8	3.8	(Ch-7)

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10a. Performance Characteristics (Cont'd):

	<u>PDE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Mission Completion Success Probability (%)	94	N/A	/ N/A	86.85	94	
Payload Range at 3200 nm (LBS)	N/A	130,000	/ 110,000	N/A	127000	(Ch-8)
Turning Capability (ft for 180 degree turn)	N/A	96	/ 90	90	90	(Ch-9)
Vehicles/Rolling Stock/Outsize Cargo (no of vehicle load configurations)	N/A	15	/ 15	15	15	(Ch-10)
Airdrop						(Ch-11)
No. of persons	N/A	102	/ 102	70	102	
LBS of heavy eqmt	N/A	110,000	/ 60,000	110000/ 60000	110000/ 60000	
No. of CDS bundles	N/A	40	/ 30	30	40	

In the Operational Requirement Document (ORD 002-91) dated 15 Sep 93, AMC defined program thresholds and objectives. Maintenance Manhours per Flying Hour, Mean Time Between Maintenance Inherent (MTBMTI), Maximum Take-Off Gross Weight (TOGW), Maximum Payload, Payload at Range, Range Unrefueled, Takeoff Field Length and Cruise Speed are no longer key parameters. The 10 Nov 94 APB reflects the requirement of the using command as defined in the 93 ORD and validated by the JROC.

1/ RANGE UNREFUELED--Range with 160,000 lbs payload, 2.25g maneuver load factor. Parameter deleted in the 10 Nov 94 APB.

2/ LANDING FIELD LENGTH--This is a key performance parameter. Maximum Payload Landing Field Length Threshold: With a 140,000 lb payload and with fuel to fly 300nm with zero payload. Objective; with a 160,000 lb payload and with fuel to fly 300 nm with zero payload.

3/ TAKEOFF FIELD LENGTH--Critical field length at the maximum takeoff gross weight, sea level, 90 degrees Fahrenheit. Parameter deleted in the 10 Nov 94 APB.

4/ BACK UP CAPABILITY--This is a key performance parameter. Backup Capability Threshold: with a 160,000 lb payload and with fuel to fly 1000nm. Objective: 167,000 payload and with fuel to fly 1000nm.

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10a. Performance Characteristics (Cont'd):

5/ MEAN TIME BETWEEN MAINTENANCE CORRECTIVE, MEAN TIME BETWEEN REMOVAL, AND MEAN MANHOURS TO REPAIR--Although not JROC-validated Key Performance Parameters, these objectives and thresholds are retained as USD(A&T) risk assessment items. Reliability and Maintainability requirement objective and threshold correspond to 100,000 Fleet Cumulative Flying Hours.

6/ PAYLOAD RANGE AT 3200MM--This is key performance parameter. Unrefueled 2.25 maneuver load factor.

7/ TURNING CAPABILITY--This is a key performance parameter. Threshold: Approximately 3 maneuvers, unassisted, paved runway. Objective: Approximately 3 maneuvers, unassisted, Expeditionary Air Field (EAF) aluminum matted vertical takeoff and landing pad.

8/ VEHICLES/ROLLING STOCK/OUTSIZE CARGO--This is a key performance parameter. The C-17 should be capable of carrying rolling stock to include outsized cargo. The vehicles include as a minimum the following: (1) Tank, combat, FTRAC, M-1; (2) Tank, combat, FTRAC, M-60A3; (3) Multiple Launch Rocket system (MLRS); (4) Infantry fighting Vehicle, M-2; (5) Tractor, FTRAC, D8K-8S-8; (6) Truck, van, shop, 2.5 ton, M-109A3 W/WN; (7) Truck, tractor, 5 ton, M-932A1 plus Semi-trailer tank, 5000 gal, M-969; (8) Truck, cargo, 5 ton, XLWB, M-928A2 W/WN plus Howitzer, medium towed, 155 mm, M-198; (9) Three each Infantry fighting vehicles, M-2; (10) Helicopter, advanced attack, AH-64; (11) Truck, tractor, 8X6, M-911, plus semi-trailer, lowbed, 60 ton, M-747; (12) Truck cargo, 10 ton, 8X8, M-977; (13) Two each truck, expansible van, 5 ton, M-935A2 (loaded side by side); (14) Truck, cargo, 5 ton, LWB, M-924A1; (15) Carrier, cargo, FTRAC, M-548 (on ramp beside a truck, utility, heavy variance, M-1097).

9/ AIRDROP--This is a key performance parameter. 60,000lb heavy equipment threshold is single platform, 110,000 lb heavy equipment objective is multiple platform.

b. Previous Change Explanations --

Payload weight requirements were changed to show that the payload for the program was decreased to account for government directed changes to the design of the C-17 aircraft. The current estimate for Payload at Range changed from 167,006 lbs to 160,000 lbs, and the current estimate for Range Unfueled changed from 2372 to 2400 nautical miles.

The estimate for Landing Field Length was adjusted from 2541 to 2740 feet to account for the latest projected operating weight and for higher approach speeds which resulted from a preliminary assessment of high lift aerodynamic testing. The Current Estimate for Takeoff

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10b. Performance Characteristics (Cont'd):

Field Length was adjusted from 7370 to 7660 feet to account for an increase in the maximum takeoff gross weight from 580,000 lbs to 585,000 lbs.

Estimates for the Reliability, Maintainability, and Availability parameters were changed to account for the latest analyses and aircraft design. Maintenance Manhours Per Flying Hour changed from 14.60 to 16.28. Mean Time Between Maintenance Inherent changed from 1.69 to 1.84. Mean Time Between Removal changed from 5.37 to 4.98. Mean Manhours to Repair changed from 4.51 to 5.88.

c. Current Change Explanations --

(Ch-1). Both the Current Estimate and Demonstrated Performance values improved since the Dec 93 SAR due to system maturity and RM&A investments.

(Ch-2). The value for demonstrated performance improved over the Dec 93 SAR for Mean Time Between Removal due to system maturity and RM&A investments. The current estimate decreased slightly from 4.98 to 4.67 based on improved fidelity of RM&A data analysis.

(Ch-3). The demonstrated performance for Maximum Payload changed from N/A reported in the Dec 93 SAR to 169,000 lbs. This value represents data from the completion of the Static Test. The current estimate reflects the results of the Static Test and was codified in the 6 Jan 94 Settlement.

(Ch-4). The Payload at Range (2400nm) changed from 155,083 lbs to N/A because there was no range payload demonstration at the 2400 nm parameter. The value in the Dec 93 SAR was an estimate based on flight test analysis. Range unrefueled was not demonstrated at the 2400 nm parameter. The metric has now changed to 3200 nm.

(Ch-5). Landing Field Length reflects changes in the 10 Nov 94 APB. Demonstrated performance was changed from N/A to 2500 feet. On 18 Nov 94, the C-17 landed with 161,000 pound payload in 2500 feet (ground roll + 500 ft.). The demonstration was aided by a 10 knot head wind. The current estimate was changed from 2740 feet to 2900 feet. Landing field length is defined as a maximum effort landing on a 3000 foot paved runway with all engines operating in a maximum reverse, 140,000 lbs payload (threshold) 160,000 lbs payload (objective), fuel to fly 300 NM mission with zero payload, sea level, 90 degree F day, no wind.

(Ch-6). Takeoff Field Length current estimate improved to reflect analysis on the final flight test data. Demonstrated performance

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10c. Performance Characteristics (Cont'd):

remains N/A. We will not demonstrate all the required parameters to include actually failing an engine on the runway.

(Ch-7). Demonstrated and current estimate for backup capability was improved from 2 $\frac{1}{2}$ to 3.8 $\frac{1}{2}$. Demonstration was completed in actual conditions at McChord AFB WA on 24 May 94.

(Ch-8). Payload Range at 3200 nm added. A 2.25G mission with 110,000 lbs payload (threshold)/130,000 lbs payload (objective) to go 3,200 nm unrefueled with additional reserves. The current estimate shows 127,000 lbs payload capability at 3,200 nm. AFOTEC plans to demonstrate this parameter during dedicated operational testing scheduled for the third quarter of FY95.

(Ch-9). Turning Capability added. An unassisted 180 degree turn on a paved runway 90 feet wide (threshold)/on a USMC expeditionary airfield, aluminum mat, 96 feet wide (objective). The capability to turn 180 degrees unassisted on a 90 foot wide runway was demonstrated during flight test at Edwards AFB.

(Ch-10). Vehicles/Rolling Stock/Outsize Cargo was added. The C-17 has demonstrated the capability to carry rolling stock to include outsize cargo. The vehicles include as a minimum the following:

1. Tank, combat, FTRAC, M-1
2. Tank, combat, FTRAC, M-60A3
3. Multiple Launch Rocket system (MLRS)
4. Infantry fighting Vehicle, M-2
5. Tractor, FTRAC, D8K-8S-8
6. Truck, van, shop, 2.5 ton, M-109A3 W/WN
7. Truck, tractor, 5 ton, M-932A1 plus Semi-trailer tank, 5000 gal, M-969
8. Truck, cargo, 5 ton, XLWB, M-928A2 W/WN plus Howitzer, medium towed, 155 mm, M-198
9. Three each Infantry fighting vehicles, M-2
10. Helicopter, advanced attack, AH-64
11. Truck, tractor, 8X6, M-911, plus semi-trailer, lowbed, 60 ton, M-747
12. Truck cargo, 10 ton, 8X8, m-977
13. Two each truck, expansible van, 5 ton, M-935A2 (loaded side by side)
14. Truck, cargo, 5 ton, LWB, M-924A1
15. Carrier, cargo, FTRAC, M-548 (on ramp beside a truck, utility, heavy variance, M-1097)

(Ch-11). Airdrop added. The C-17 will have the capability to airdrop 102 paratroopers, 60,000 lbs (single platform) heavy equipment loads (threshold) 110,000 lb objective, and 30 Container Delivery System (CDS) bundles (threshold) (40 CDS objective). To

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10c. Performance Characteristics (Cont'd):

date, the C-17 has successfully airdropped 70 paratroopers, both 60,000 lb and 110,000 lb heavy equipment loads and 30 CDS bundles. The current estimate is to successfully demonstrate airdrop of 102 paratroopers by mid-Apr 95. An increased capability to 40 CDS bundles is expected to be demonstrated by Aug 95.

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 November 10, 1994.

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

a. Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	3755.5	4089.1	4071.4
Procurement	18425.7	8769.3	8305.4
Flyaway	(15420.7)		(0.0)
Airframe			(6039.6)
Engines			(444.2)
Avionics			(198.5)
Non-Recurring			(370.3)
Total Flyaway	(15420.7)		(7052.6)
Total Other Weapon System			(0.0)
Peculiar Support	(1213.6)		(773.9)
Initial Spares	(1791.4)		(478.9)
Construction (MILCON)	214.1	138.0	140.2
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 81 Base-Year \$	22395.3	12996.4	12517.0
Escalation	19416.6	9480.0	8884.4
Development (RDT&E)	(1585.4)	(1828.0)	(1826.9)
Procurement	(17667.2)	(7556.0)	(6957.1)
Construction (MILCON)	(164.0)	(96.0)	(100.4)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	41811.9	22476.4	21401.4
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>210</u>	<u>40</u>	<u>40</u>
Total	210	40	40

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

NOTES:

The quantity excludes one aircraft (T-1) that is fully configured as a test article; however, it is not reconfigured to the production configuration.

This document accounts for the 40 production aircraft the Department of Defense committed to prior to Milestone IIIB. Forty is considered an appropriate commitment to evaluate whether demonstrated program cost, schedule, and performance warrant completing the 120 aircraft program. This decision will be part of an integrated airlift force structure decision at the Nov 95 C-17 Milestone IIIB review.

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 November 10, 1994.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (NOV 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY81\$)	12517.0	12996.4	
(2) Quantity	40	40	
(3) Unit Cost	312.93	324.91	-3.69
b. Procurement			
(1) Cost (BY81\$)	8305.4	8769.3	
(2) Quantity	40	40	
(3) Unit Cost	207.64	219.23	-5.29

The costs reported are in millions of dollars.

As of the date of this report there is no Nunn-McCurdy Unit Cost

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12. Unit Cost Summary (Cont'd):

Breach to the current APB dated 10 Nov 94.

However, the C-17 APB dated 20 Feb 92, in effect at the time of the enactment of the Federal Acquisition Streamlining Act (FASTA) reflected a previous Nunn-McCurdy breach declared in the Dec 93 SAR. Because an updated APB was still in OSD coordination and not approved until 10 Nov 94, the program was technically in breach status from 13 Oct 94 until 10 Nov 94. The program has been and continues to perform well within the unit cost objectives of the updated APB. In fact, the new program environment created by the C-17 settlement agreement continues to produce significant improvements in cost performance, and the ongoing C-17 Should Cost Review promises to further reduce unit cost. Therefore, this breach is administrative only and is being reported to remain in strict compliance with the statute. A breach package for the 28 day period using the Feb 92 APB as a baseline is represented as follows:

12.a. Total Program Unit Cost in BY81\$

*****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR*****

Dec 94 SAR total program costs of \$12517.0M divided by 40 aircraft equals a unit cost of \$312.93M. Baseline costs from the Feb 92 APB of \$19262.5M divided by 120 baseline aircraft yields a unit cost of \$160.52M. The percent of change for the period in question would have been 94.94%.

12.b. Procurement Unit Cost in BY81\$

*****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR*****

Dec 94 SAR procurement cost of \$8305.4M divided by 40 aircraft equal a unit cost of \$207.64M. Baseline cost from the Feb 92 APB of \$15084.0M divided by 120 baseline aircraft yields a unit cost of \$125.70M. The percent of change for the period in question would have been 65.18%.

12.c. Total Program Unit Cost in TY\$

*****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR*****

Dec 94 SAR total program costs of \$21491.4M divided by 40 aircraft equals a unit cost of \$535.04M. Baseline costs from the Feb 92 APB of \$35802.0M divided by 120 baseline aircraft yields a unit cost of \$298.35M. The percent of change for the period in question would have been 79.33%

12.d. Procurement Unit Cost in TY\$

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12. Unit Cost Summary (Cont'd):

****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR****

Dec 94 SAR procurement cost of \$15262.5M divided by 40 aircraft equal \$381.56M. Baseline cost from the Feb 92 APB of \$29763.2M divided by 120 baseline aircraft yields a unit cost of \$248.03M. The percent of change would have been 53.84%.

12.e. Changes from the Baseline Report during the period from 13 Oct to 10 Nov 94 is as follows:

****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR****

- (1) PAUC in BY81\$ changed by \$152.404M or 94.944%.
- (2) AUPC in BY81\$ changed by \$81.935M or 65.183%.
- (3) PAUC Quantity changed by -80 aircraft or -66.667%.
- (4) PAUC in TY\$ changed by \$236.685M or 79.331%.
- (5) AUPC in TY\$ changed by \$133.536M or 53.839%.

12.f. Changes from the Previous SAR (31 Dec 93) are as follows:

****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR****

- (1) PAUC in BY81\$ changed by \$0.030M or 0.010%.
- (2) AUPC in BY81\$ changed by \$0.730M or 0.353%.
- (3) PAUC Quantity change by 0 or 0.000%.
- (4) PAUC in TY\$ changed by \$0.835M or 0.156%.
- (5) AUPC in FY\$ changed by \$1.850M or 0.487%.

Under pre-FASTA guidelines there were no breaches.

12.g. Initial SAR

- (1) Program Acquisition Cost in BY\$ were \$19544.6M.
- (2) Program Acquisition Cost in TY\$ were \$39753.8M.

This SAR accounts for the 40 production aircraft the Department of Defense committed to prior to Milestone IIIB. Forty is considered an appropriate commitment to evaluate whether demonstrated program cost, schedule, and performance warrant completing the 120 aircraft program. This decision will be part of an integrated airlift force structure decision at the Nov 95 C-17 Milestone IIIB review.

The 10 Nov 94 APB is the Approved Program Baseline for forty aircraft and supersedes the 120 aircraft APB dated Feb 92.

12.h. Unit Cost Changes for the period between 13 Oct - 10 Nov 94.

- (1) PAUC--

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12. Unit Cost Summary (Cont'd):

****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR****

On 13 Oct 94, the FASTA changed the reporting baseline for unit cost in the SAR. Prior to FASTA, the previous SAR was used as the baseline; under FASTA the current APB is used for the baseline. OSD direction disallows the current C-17 APB dated 10 Nov 94 for the period in question (13 Oct - 10 Nov 94). Therefore, the superseded Feb 92 APB would be used for that 28 day period.

A Nunn-McCurdy Unit Cost breach was declared in the Dec 93 SAR due to a decrease in quantity as described below:

The USD(A&T) announced in Dec 93 that forty aircraft would be deemed the appropriate quantity to evaluate program cost, schedule, and performance. Therefore the total program acquisition costs must be divided by 40 instead of the baselined 120 aircraft. This decrease in quantity caused the Program Acquisition Unit Cost to increase in excess of 15%.

Had the total program acquisition costs reported in the Dec 93 SAR been compared to the Feb 92 APB the unit cost would have changed as follows:

The total program costs from the Dec 93 SAR of \$12515.9M divided by 40 aircraft results in a PAUC in FY81\$ of \$312.90M. The total program costs from the 92 APB of \$19262.5M divided by 120 baseline aircraft results in a PAUC in FY81\$ of \$160.52M. That is a PAUC percent change of 94.93%.

Of the 94.94% increase in the period from 13 Oct - 10 Nov 94, 94.93% was explained in the Dec 93 SAR. The additional change is due to the costs required to support 40 aircraft not reported in the Dec 93 SAR offset by the decrease in MILCON. MILCON required for the 120 aircraft program was erroneously reported in the Dec 93 SAR. The estimate reported in the Dec 94 SAR represents MILCON for 40 aircraft.

(2) AUPC--

****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR.****

Had the Procurement cost reported in the Dec 93 SAR been compared to the 92 APB, the AUPC breach for the period between 13 Oct-10 Nov 94 would have been as follows:

The FY81 procurement cost reported in the Dec 93 SAR of \$8276.3M divided by 40 aircraft would yield a unit cost of \$206.91M. The

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12. Unit Cost Summary (Cont'd):

procurement cost in the Feb 92 APB of \$15084.0M divided by 120 baseline aircraft would result in a unit cost of \$125.7M. That is an AUPC change of 64.61%.

That is of the 65.18% shown for the period in the Dec 94 SAR, 64.61% is due to the quantity decrease and was explained in the Dec 93 SAR. The change to procurement cost since the Dec 93 SAR is due to the addition of support costs required to support 40 aircraft. Costs in the Dec 93 SAR were truncated after FY96.

12.i. Impact of Performance or Schedule Changes on Unit Cost.

Performance changes have had negligible impact on PAUC.

12.j. Program Management and Control.

C-17 SYSTEMS PROGRAM MANAGER:

Brig Gen Ronald T. Kadish
C-17 Systems Program Office
2600 Paramount Place
Fairborn OH 45324-6766
DSN 785-1545; Commercial: (513) 255-1545

C-17 PROGRAM EXECUTIVE OFFICER (PEO)

Brig Gen James Childress
AFPEO/TA
Pentagon
Washington DC 20330-1060
DSN 255-2785; Commercial: (703) 693-2785

12.k. Cost Control Actions.

The SPO has initiated quarterly EAC updates for existing contracts, providing additional insight into contractor performance. Various productivity initiatives (Industrial Modernization Improvement Program, Value Engineering, Cost Reduction Candidates, and Productivity Enhancement Program) are in place or scheduled to be implemented. In addition, both the SPO and MDA have incorporated Integrated Product Teams, which are accountable for attainment of cost, schedule, and performance baseline.

12.l. Contract Information (In Millions of TY\$)

****THIS BREACH WAS DECLARED AND CERTIFIED LAST YEAR****

- (1) The contractor is McDonnell Douglas.
- (2) Contract title is C-17 FSED/Lot I/ Lot II.
- (3) Contract number is F33657-81-C-2108.

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12. Unit Cost Summary (Cont'd):

- (4) Actual Cost of Work Performed as of 25 Dec 94 is \$8014.6M.
- (5) Percent contract complete (BCWP/target cost) is 98%.
- (6) Variances:

BASELINE REPORT (Dec 93 SAR) cost variance was -\$2535.8M or -50.3%; the schedule variance was -\$56.1M or -1.1%.

PREVIOUS SAR cost variance was -\$2535.8M or -50.3%; the schedule variance was -\$56.1M or -1.1%.

CURRENT VALUES the cost variance is -\$2888.1M or -56.3%; the schedule variance is -\$32.0M or -0.6%.

CHANGE FROM THE BASELINE REPORT the cost variance is -\$352.3M or -6.0%; the schedule variance is +\$24.1M or +0.5%.

CHANGE FROM THE PREVIOUS SAR the cost variance is -\$352.3M or -6.0%; the schedule variance is +\$24.1M or +0.5%.

(7) Explanation of Variances--

COST VARIANCE: The journaling of Sustaining Engineering charges back to the FSED portion of the contract in accordance with the 6 Jan 94 Settlement is responsible for half of the direct cost variance. The rest of the direct variance for the period is because no budget remains on the contract. The contractor continues to charge actuals required to complete the effort, but is unable to claim additional earned value. Cost accounts for provisioning, spares required for the flight test extension, flap retrofit and flap and slat effort are the negative cost drivers because they continue to accumulate actuals without budget. Rate changes for overhead contribute to the negative indirect cost variance.

SCHEDULE VARIANCE: Schedule was regained as the contract neared completion. Receipt of critical past due parts and early delivery of the Quick Engine Change Kits and support equipment hardware contributed to schedule improvement.

(8) Impact of Variances on Contract.--

IMPACT: This contract has exceeded ceiling since Nov 90.

(9) Impact of Variance on Unit Costs.--

NONE. The unit costs increase is due to quantity reductions.

- (1) The contractor is McDonnell-Douglas.
- (2) The contract title is C-17 Lot III Production.

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12. Unit Cost Summary (Cont'd):

- (3) The contract number is F33657-89-C-0001.
- (4) Actual Cost of Work Performed as of 31 Oct 94 is \$1171.4M.
- (5) Percent contract completed (BCWP/target cost) is 98%.
- (6) Variances:

BASELINE REPORT (DEC 93 SAR) cost variance was -\$168.9M or -17.82%; the schedule variance was -\$10.0M or -1.04%.

PREVIOUS SAR the cost variance was -\$168.9M or -17.82%; the schedule variance was -\$10.0M or -1.04%.

CURRENT VALUES the cost variance is -\$211.0M or -21.9%; the schedule variance is -\$2.1M or -0.21%.

CHANGE FROM BASELINE REPORT the cost variance is -\$42.1M or -4.08%; the schedule variance is +\$7.9M or +0.83%.

CHANGE FROM PREVIOUS SAR the cost variance is -\$42.1M or -4.08%; the schedule variance is +\$7.9M or +0.83%.

(7) Explanation of Variances.--

COST VARIANCE: The negative variance for the period is due to actuals required to complete the contracted effort without available budget. Actuals were charged for effort required to meet performance specification (e.g., titanium flaps and slats and work on the Aerial Delivery System) without budget for those cost accounts. In addition, actual hours were charged for cargo ramp and door retrofit and corrective actions required on the wing, fuel and fuselage without additional budget.

SCHEDULE VARIANCE: As we approached contract completion, schedule recovered. All lot buy aircraft have been delivered to the government as of this reporting.

(8) Impact of Variances on contract.--

IMPACT: Lot III contract is at ceiling.

(9) Impact of Variance on unit costs.--

NONE. The increase in unit costs is due to quantity reductions.

- (1) The contractor is McDonnell-Douglas.
- (2) The contract title is C-17 Lot IV Production.
- (3) The contract number is F33657-92-C-0030.
- (4) Actual Cost of Work Performed as of 27 Nov 94 is \$1004.1M.
- (5) Percent contract completed (BCWP/target cost) is 95%.
- (6) Variances:

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12. Unit Cost Summary (Cont'd):

BASELINE REPORT (DEC 93 SAR) the cost variance was -\$53.0M or -7.01%; the schedule variance was -\$48.5M or -6.03%.

PREVIOUS SAR the cost variance was -\$53.0M or -7.01%; the schedule variance was -\$48.5M or -6.03%.

CURRENT VALUES the cost variance is -\$101.8M or -11.3%; the schedule variance is -\$14.0M or -1.5%.

CHANGE FROM THE BASELINE REPORT the cost variance is -\$48.8M or -4.29%; the schedule variance is +\$34.5M or +4.53%.

CHANGE FROM THE PREVIOUS SAR the cost variance is -\$48.8M or -4.29%; the schedule variance is +\$34.5M or +4.53%.

(7) Explanation of Variances.--

COST VARIANCE: The negative cost variance is due to manpower cost required to recover the behind schedule condition in the slats and main landing gear pod efforts. In addition, actual costs for fabrication for the wing mod and fuel system redesign without additional budget contributed to the variance.

SCHEDULE VARIANCE: The positive schedule variance is due to schedule recovery as the contract nears completion. Process improvements helped to regain schedule on the main landing gear pod and on the assembly floor. The last two aircraft of this lot buy were delivered earlier than their respective contracted delivery dates.

(8) Impact of variances on contract.--

IMPACT: Process improvements initiated on Lot IV will positively impact aircraft delivery schedules for subsequent lot buys.

(9) Impact of variances on unit costs.--

NONE. The increase in unit costs is due to quantity reductions.

- (1) The contractor is McDonnell-Douglas.
- (2) The contract title is C-17 Lot V Production.
- (3) The contract number is F33657-92-C-0031.
- (4) The Actual Cost of Work Performed as of 25 Dec 94 is \$1342.8M.
- (5) The percent contract completed (BCWP/target cost) is 91%.
- (6) Variances:

BASELINE REPORT (DEC 93 SAR) the cost variance was -\$34.0M or -6.55%;

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12. Unit Cost Summary (Cont'd):

the schedule variance was -\$59.9M or -10.35%.

PREVIOUS SAR the cost variance was -\$34.0M or -6.55%; the schedule variance was -\$59.9M or -10.35%.

CURRENT VALUES the cost variance is -\$38.8M or -3.0%; the schedule variance is -\$20.8M or -1.6%.

CHANGE FROM THE BASELINE REPORT the cost variance is -\$4.8M or +3.55%; the schedule variance is +\$39.1M or +8.75%.

CHANGE FROM THE PREVIOUS SAR the cost variance is -\$4.8M or +3.55%; the schedule variance is +\$39.1M or +8.75%.

(7) Explanation of Variances.--

COST VARIANCE: The unfavorable variance is attributable to rework efforts on the titanium tubes and welds. The rework is needed because of tube ferrule and swagging problems, rework and scrap of tubes with wrong ferrules and end fittings, and parts not bent to design. The negative variance is somewhat offset by a positive indirect variance caused by overhead allocation due to the early close out of the contractor's Columbus facility.

SCHEDULE VARIANCE: The schedule variance for the reporting period is positive. Assembly schedule has improved because part shortages have decreased. This improvement is due to the implementation of a critical parts tracking system at the contractor's facility. The first three aircraft of this lot buy were delivered ahead of their scheduled contract delivery dates. This positive delivery trend is expected to continue for the remainder of this and subsequent lot buys.

(8) Impact of Variances on Contract.--

IMPACT: The titanium tubes and welds problem will impact Lot VI.

(9) Impact of Variances on Unit Costs.--

NONE. The increase in unit cost is due to quantity reductions.

- (1) The contractor is McDonnell-Douglas.
- (2) The contract title is C-17 Lot VI Production.
- (3) The contract number is F33657-92-C-0037.
- (4) The Actual Cost of Work Performed as of 25 Dec 94 is \$694.3M.
- (5) The percent contract completed (BCWP/target cost) is 48%.
- (6) Variances:

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12. Unit Cost Summary (Cont'd):

BASLINE REPORT AND PREVIOUS SAR the Lot VI contract was not reported in the Dec 93 SAR, therefore the cost and schedule variances are N/A.

CURRENT VALUES the cost variance is -\$7.6M or -1.1%; the schedule variance is -\$23.6M or -3.4%.

CHANGE FROM THE BASELINE REPORT OR PREVIOUS SAR the Lot VI contract was not reported in the Dec 93 SAR, therefore the change in both cost and schedule variance is N/A.

(7) Explanation of Variances.--

COST VARIANCE: The negative variance is due to the rework of titanium tubes and welds. The rework is needed because of tube ferrule and swagging problems, rework and scrap of tubes with wrong ferrules and end fittings and parts not bent to design. In addition, tooling moved from the contractor's closed Columbus facility did not conform to the Huntington Beach layout. This resulted in overtime charges. The negative direct variance is offset by a positive variance in overhead. Overhead was allocated at a lower rate than budgeted due to the early close out of the Columbus effort.

SCHEDULE VARIANCE: The unfavorable schedule variance is due to shortages in Assembly. Fabrication and tooling delays due to the transfer of machinery from the closed Columbus facility caused schedule slips at Huntington Beach and in the cargo door area at St. Louis.

(8) Impact of Variances on Contract.--

IMPACT: Unplanned demand and quick response effort on the titanium tubes at Huntington Beach will continue to impact Lot VI costs.

(9) Impact of variances on Unit Costs.--

NONE. The unit costs increase is due to quantity reductions.

12.m. **Contracts Exceeding Contract Cost Baseline Thresholds.**

There have been no additional Contract Cost Baseline threshold breaches since the Dec 93 SAR. Two contracts were reported as breaches in the Dec 93 SAR. The consolidated C-17 FSED/Lot I/Lot II contract, F33657-81-C-2108, and the C-17 Production Lot III contract, F33657-89-C-0001, exceed the Contract Cost Baseline by 42.6% and 24% respectively. The past performance on these contracts does not impact the current production lots.

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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	-1.8	-175.2	-12.9	-189.9
Quantity	-	-23288.1	-	-23288.1
Schedule	-	+1720.6	+10.1	+1730.7
Engineering	+17.5	+50.6	-	+68.1
Estimating	+378.2	+4561.2	-76.2	+4863.2
Other	+170.0	+178.0	-	+348.0
Support	-24.3	-3951.5	-	-3975.8
Subtotal	+539.6	-20904.4	-79.0	-20443.8
Current Changes:				
Economic	9.3	-34.0	6.0	-18.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	6.0	-408.3	-64.5	-466.8
Other	-	-	-	-
Support	2.5	516.3	-	+518.8
Subtotal	+17.8	+74.0	-58.5	+33.3
Total Changes	+557.4	-20830.4	-137.5	-20410.5
Current Estimate	5898.3	15262.5	240.6	21401.4

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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	-	-10355.1	-	-10355.1
Schedule	-	+168.7	-	+168.7
Engineering	+10.5	+21.4	-	+31.9
Estimating	+222.4	+1913.8	-44.9	+2091.3
Other	+99.7	+91.4	-	+191.1
Support	-17.7	-1989.6	-	-2007.3
Subtotal	+314.9	-10149.4	-44.9	-9879.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.4	-208.3	-29.0	-237.7
Other	-	-	-	-
Support	1.4	237.4	-	+238.8
Subtotal	+1.0	+29.1	-29.0	+1.1
Total Changes	+315.9	-10120.3	-73.9	-9878.3
Current Estimate	4071.4	8305.4	140.2	12517.0

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Engineering: Revised estimate for the development of the Airlift Defensive Systems program.

Estimating: Revised estimates as a result of updated annual estimates, external program decisions, adjustments of current and prior year escalation changes, additional Economic Price Adjustment liability, Congressional funding adjustments, reflection of prior actual costs, and miscellaneous DoD program adjustments.

Other: Additional funding provided through 6 Jan 94 settlement (claims, flight test) between the

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

government and contractor.

Support: Revised estimates as a result of updated annual estimates of contractor and other government costs for training, data, simulator, and peculiar support equipment; current and prior year escalation changes; and current and prior year actuals.

Procurement

Economic: Revised economic escalation indices. An economic adjustment was made for the negative program change.

Quantity: Deleted 170 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 Dec 90 SAR. Allocation to schedule due to quantity decrease in Dec 93 SAR. Revised schedule for FY95-FY96 from buy profile 8-12 to 6-8.

Engineering: Added Defensive Systems (Defensive Avionics capability) to the C-17. Revised estimate for TACAN and Airlift Defensive Systems program. Allocation to engineering due to quantity decrease.

Estimating: Estimating changes as a result of updated annual estimates, external program decisions, including slower build rates, adjustments for current and prior year actuals and escalation changes, additional requirement to fund lots to ceiling, Congressional funding adjustments, miscellaneous DoD program adjustments, and a revised multi-year procurement strategy. Allocation to estimating due to quantity decrease.

Other: Additional funding provided for the 6 Jan 94 settlement enactment. The settlement between the government and the contractor resolved claims and initiated systems improvements to CAD/CAM, Management Information System, and Advanced Quality System.

Support: Estimating changes as a result of the aircraft quantity reduction, updated annual estimates, external program decisions including slower build up rates, adjustments to current and prior year actuals and escalation changes, revised multi-year procurement strategy, Congressional funding adjustments, incorporation of stock funding for initial spares, addition of Common Support Equipment (CSE) due to Integrated Weapon System Management (IWSM) and Interim Contractor Support

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

(ICS) and changed requirements for support equipment and spares due to the reduction in quantity.

MILCON

Economic: Revised economic escalation indices.

Schedule: The schedule change is due to a delay in projects to later years due to program stretch out.

Estimating: Decreased Military construction projects applicable to the decrease of 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

(Economic)

Revised escalation indices. (Economic)	N/A	+9.3
Adjustment for Current & Prior Inflation. (Estimating)	-6.2	-8.9
Adjustment for Current & Prior Inflation. (Support)	-0.7	-0.9

(Estimating)

Revised estimate due to miscellaneous program adjustments (Estimating)	-10.8	-13.3
Additional budget provided as part of the 6 Jan 94 settlement for flight test. (Estimating)	+29.1	+51.2
Mission support (PAP 56) reprogrammed from the C-17 R&D line to the Strategic Airlift procurement account. (Estimating)	-12.5	-23.0

(Support)

Additional support effort required by the 6 Jan 94 settlement for flight test. (Support)	+1.0	+1.9
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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Update of Simulator requirement not included in the Dec 93 SAR. (Support)	+1.1	+1.5
RDT&E Subtotal	+1.0	+17.8
(2) <u>Procurement</u> (Economic)		
Revised escalation indices. (Economic)	N/A	-40.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+6.1
Adjustment for Current & Prior Inflation. (Estimating)	+11.7	+22.6
Adjustment for Current & Prior Inflation. (Support)	+2.5	+3.8
(Estimating)		
Congressional actions resulted in budget cuts. (Estimating)	-220.0	-430.9
(Support)		
Interim Contractor Support required for a 40 aircraft buy. The Dec 93 SAR truncated support after FY96. (Support)	+167.5	+365.3
Initial Spares required for a 40 aircraft buy. The Dec 93 SAR truncated support after FY96. (Support)	+100.7	+212.7
Support budgets, including Peculiar Support Equipment and Training, were decreased as a result of Congressional Actions. (Support)	-33.3	-65.5
Procurement Subtotal	+29.1	+74.0
(3) <u>MILCON</u> (Economic)		
Revised escalation indices. (Economic)	N/A	+3.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.3	-0.5
(Estimating)		

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

(Dollars in Millions)

Budget changes; Dec 93 SAR incorrectly
reflected MILCON for 120 aircraft
(Estimating)

<u>Base-Year</u>	<u>Then-Year</u>
-28.7	-64.0

MILCON Subtotal

-29.0	-58.5
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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
189.30	-16.62	--	5.04	1.82	13.76	--	5.80	9.80	199.10

b. Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
199.10	-5.22	263.99	43.27	1.70	109.91	8.70	-86.43	335.92	535.04

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

a. RDT&E --

C-17 FSED/LotI/LotII:

McDonnell-Douglas, Long Beach, CA
F33657-81-C-2108, FPIF
Award: July 23, 1982
Definitized: December 31, 1985

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>

\$31.6	\$31.6	0
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Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$5874.4	\$6814.0	6

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$6814.0	\$6814.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2535.8	\$-56.1
Cumulative Variances To Date (12/25/94)	\$-2888.1	\$-32.0
Net Change	\$-352.3	\$24.1

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15. Contract Information (Cont'd):

Explanation of Change:

COST VARIANCE: The journaling of Sustaining Engineering charges back to the FSED portion of the contract in accordance with the 6 Jan 94 Settlement is responsible for half of the direct cost variance. The rest of the direct variance for the period is because no budget remains on the contract. The contractor continues to charge actuals required to complete the effort, but is unable to claim additional earned value. Cost accounts for provisioning, spares required for the flight test extension, flap retrofit and flap and slat effort are the negative cost drivers because they continue to accumulate actuals without budget. Rate changes for overhead contribute to the negative indirect cost variance.

SCHEDULE VARIANCE: Schedule was recovered as the contract neared completion. Receipt of critical past due parts and early delivery of the Quick Engine Change Kits and support equipment hardware contributed to schedule improvement.

CONTRACT CHANGES: The target and ceiling price increased because of Economic Price Adjustment and contract modifications including the All-Weather Testing, Air Defensive Systems, Crash Battle Damage, and Troop Seats.

IMPACT: This contract has exceeded ceiling since Nov 90.

Separate reporting for FSED, Lot I and Lot II has been discontinued. Total contract effort exceeds 95% complete.

THIS WILL BE THE FINAL SAR REPORTING FOR THIS CONTRACT.

b. Procurement --

C-17 Lot III Production:
McDonnell-Douglas, Long Beach, CA
F33657-89-C-0001, FPIF
Award: July 1, 1991
Definitized: July 30, 1991

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1026.2	\$1215.0	4

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1027.3	\$1216.3	4

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1216.3	\$1216.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-168.9	\$-10.0
Cumulative Variances To Date (10/30/94)	<u>\$-211.0</u>	<u>\$-2.1</u>
Net Change	\$-42.1	\$7.9

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15. Contract Information (Cont'd):

Explanation of Change:

COST VARIANCE: The negative variance for the period is due to actuals required to complete the contracted effort without available budget. Actuals were charged for effort required to meet performance specification (e.g., titanium flaps and slats and work on the Aerial Delivery System) without budget for those cost accounts. In addition, actual hours were charged for cargo ramp and door retrofit and corrective actions required on the wing, fuel and fuselage without additional budget.

SCHEDULE VARIANCE: As we approached contract completion, schedule recovered. All lot buy aircraft have been delivered to the government as of this reporting.

CONTRACT CHANGES: The target and ceiling price increased due to the definitization of the Tactical Air Navigation (TACAN) modification.

IMPACT: Lot III contract is at ceiling.

The Lot III contract is 98% complete and all aircraft have been delivered. Monthly CPR reporting was suspended as of the end of Oct 94. The program office will receive a final CPR at contract completion.

THIS WILL BE THE FINAL SAR REPORTING OF THIS CONTRACT.

<u>C-17 Lot IV Production:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
McDonnell-Douglas, Long Beach, CA				
F33657-92-C-0030, FPIF	\$1069.7	\$1204.9	4	
Award: January 31, 1990				
Definitized: May 28, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1075.9	\$1211.8	4	\$1157.6	\$1161.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-53.0	\$-48.5
Cumulative Variances To Date (11/27/94)	\$-101.8	\$-14.0
Net Change	\$-48.8	\$34.5

Explanation of Change:

COST VARIANCE: The negative cost variance is due to manpower cost required to recover the behind schedule condition in the slats and

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15. Contract Information (Cont'd):

main landing gear pod efforts. In addition, actual costs for fabrication for the wing mod and fuel system redesign without additional budget contributed to the variance.

SCHEDULE VARIANCE: The positive schedule variance is due to schedule recovery as the contract nears completion. Process improvements helped to regain schedule on the main landing gear pod and on the assembly floor. The last two aircraft of this lot buy were delivered earlier than their respective contracted delivery dates.

CONTRACT CHANGES: The target and ceiling price increased due to the definitization of the Tactical Air Navigation (TACAN) and Vought Subcontract Change modifications.

IMPACT: Process improvements initiated on Lot IV will positively impact aircraft delivery schedules for subsequent lot buys.

The Lot IV contract is over 95% complete and all aircraft have been received. Monthly CPR reporting was discontinued as the end of Nov 94. The program office will receive a final report at contract completion.

THIS WILL BE THE FINAL SAR REPORTING OF THIS CONTRACT.

<u>C-17 Lot V Production:</u>			Initial Contract Price	
McDonnell-Douglas, Long Beach, CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
F33657-92-C-0031, FPIF	\$1624.3	\$1821.9	6	
Award: October 29, 1993				
Definitized: October 29, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1624.4	\$1822.0	6	\$1671.1	\$1671.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-34.0	\$-59.9
Cumulative Variances To Date (12/25/94)	\$-38.8	\$-20.8
Net Change	\$-4.8	\$39.1

Explanation of Change:

COST VARIANCE: The unfavorable variance is attributable to rework efforts on the titanium tubes and welds. The rework is needed because of tube ferrule and swagging problems, rework and scrap of tubes with wrong ferrules and end fittings, and parts not bent to design. The negative variance is somewhat offset by a positive indirect variance caused by overhead allocation due to the early

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15. Contract Information (Cont'd):

close out of the contractor's Columbus facility.

SCHEDULE VARIANCE: The schedule variance for the reporting period is positive. Assembly schedule has improved because part shortages have decreased. This improvement is due to the implementation of a critical parts tracking system at the contractor's facility. The first three aircraft of this lot buy were delivered ahead of their scheduled contract delivery dates. This positive delivery trend is expected to continue for the remainder of this and subsequent lot buys.

IMPACT: The titanium tubes and welds problem will impact Lot VI.

The Lot V contract is 91% complete as of this reporting. The last aircraft of this lot buy is scheduled for delivery Jun 95.

<u>C-17 LOT VI Production:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
McDonnell-Douglas, Long Beach, CA				
F33657-92-C-0037, FPIF	\$1628.2	\$1826.3	6	
Award: March 28, 1994				
Definitized: June 3, 1994				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1628.2	\$1826.3	6	\$1686.0	\$1700.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/25/94)	\$-7.6	\$-23.6
Net Change	\$-7.6	\$-23.6

Explanation of Change:

COST VARIANCE: The negative variance is due to the rework of titanium tubes and welds. The rework is needed because of tube ferrule and swagging problems, rework and scrap of tubes with wrong ferrules and end fittings and parts not bent to design. In addition, tooling moved from the contractor's closed Columbus facility did not conform to the Huntington Beach layout. This resulted in overtime charges. The negative direct variance is partially offset by a positive variance in overhead. Overhead was allocated at a lower rate than budgeted due to the early close out of the Columbus effort.

SCHEDULE VARIANCE: The unfavorable schedule variance is due to shortages in Assembly. Fabrication and tooling delays due to the transfer of machinery from the closed Columbus facility caused

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15. Contract Information (Cont'd):

schedule slips at Huntington Beach and in the cargo door area at St. Louis.

IMPACT: Unplanned demand and quick response effort on the titanium tubes at Huntington Beach will continue to impact Lot VI costs.

This is the first SAR reporting of the Lot VI contract. As of the end of Dec 94, the contract is 48% complete.

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

a. Program Status --

(1) Percent Program Completed: 71.4% (15 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 84.4% (\$18064.5 / \$21401.4)

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

<u>Appropriation</u>	<u>Prior Years (FY81-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	5745.1	85.8	15.7	51.7	5898.3
Procurement	12156.8	2520.0	155.9	429.8	15262.5
MILCON	162.6	6.9	29.3	41.8	240.6
O&M	-	-	-	-	-
Total	18064.5	2612.7	200.9	523.3	21401.4

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1981				32.0	33.4	33.4	33.4	11.9
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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

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
1987				465.7	625.5	625.5	625.5	2.7
1988				798.8	1101.5	1101.5	1101.5	3.0
1989				649.3	938.3	933.0	933.0	4.2
1990				606.6	903.9	903.0	903.0	4.0
1991				484.0	748.3	748.3	733.3	4.3
1992				158.9	252.9	252.4	220.5	2.8
1993				100.9	164.3	162.0	50.5	2.7
1994				139.0	231.1	106.2	28.3	2.0
1995				109.9	188.1	7.5	0.8	2.7
1996				48.7	85.8			3.0
1997				8.7	15.7			3.0
1998				7.3	13.6			3.0
1999				4.4	8.5			3.0

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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: 3600 Research, Development, Test + Eval, AF (Cont'd)

2000				7.4	14.6			3.0
2001				7.3	15.0			3.0
Subtot				4071.4	5898.3	5430.6	5187.6	

Appropriation: 3010 Aircraft Procurement, Air Force

1987		17.5		40.5	61.2	61.2	61.2	2.7
1988	2	49.6	379.0	462.4	733.4	727.5	726.5	3.1
1989	4	9.4	565.5	724.2	1186.3	1177.4	1039.7	4.2
1990	4	42.0	680.5	894.5	1511.7	1510.9	1316.0	4.0
1991		43.4	0.1	132.9	233.7	233.5	112.1	4.3
1992	4	12.8	758.4	1001.9	1804.5	1670.1	1373.6	2.8
1993	6	18.4	1079.6	1124.9	2065.4	1856.5	1248.6	2.7
1994	6	13.1	1045.8	1125.4	2115.8	1751.3	401.7	2.0
1995	6	111.8	1040.4	1262.8	2444.8			2.7
1996	8	52.3	1129.8	1263.8	2520.0			3.0
1997			0.7	75.9	155.9			3.0
1998			0.7	72.3	152.9			3.0
1999			0.6	50.8	110.7			3.0

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

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

2000			0.6	40.9	91.7			3.0
2001			0.6	32.2	74.5			3.0
Subtot	40	370.3	6682.3	8305.4	15262.5	8988.4	6279.4	

BY81 dollars are budgeted for the recurring effort in zero quantity years as follows:

In FY91 the \$0.1M in the recurring reflects funding for contractor support. The funds were obligated under CRA before the restrictions were published. JAG ruled this obligation appropriate.

Funding in the recurring line for FY97-FY01 supports the Automated Communications Processor (ACP) stated as a recurring requirement in the AMC POM. (FY97, \$0.7M; FY98, \$0.7M; FY99, \$0.6M; FY00, \$0.6M; FY01, \$0.6M).

Appropriation: 3300 Military Construction, Air Force

1989				3.9	5.7	5.0	4.8	4.2
1990				3.2	5.0	4.6	4.6	4.0
1991				18.4	29.5	25.6	24.9	4.3
1992				46.6	76.1	72.8	63.7	2.8
1993				18.5	31.1	30.3	21.1	2.7
1994				8.8	15.2			2.0
1995								2.7

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C-17, December 31, 1994

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 (Cont'd)

1996				3.8	6.9			3.0
1997				15.5	29.3			3.0
1998				21.0	40.8			3.0
1999				0.5	1.0			3.0
Subtot				140.2	240.6	138.3	119.1	
Grand Total	40	370.3	6682.3	12517.0	21401.4	14557.3	11586.1	

Obligations and expenditures are as of 31 DEC 94. This information was compiled from accounting and finance records.

17. Production Rate Data:

a. Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	1/1
Procurement	16/17

- The above information reflects deliveries as of DEC 94.

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

- Design-to-Cost Objective never established.

18. Operating and Support Costs:

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

a. Assumptions and Ground Rules --

Calculation of C-17 Operating and Support Cost are based on 40 aircraft, of which 32 would be Primary Authorized Aircraft (PAA), 4 trainers, and 4 Backup Aircraft Inventory (BAI). These aircraft are split among four operational squadrons at one base. The cost estimate is an extrapolation of the 120 estimate provided in the Dec 93 SAR. Aircraft maintenance assumes a primarily two-level concept. The average cost is developed by dividing the total O&S cost by the estimated life (6 years phase-in + 25 years steady state) and then dividing by the four squadrons. The estimate includes direct and indirect, as detailed below.

(1) Direct costs include: mission personnel, unit-level consumables, depot maintenance, and sustaining support costs. Mission personnel consist of aircrew, base maintenance, wing/squadron overhead, and weapon system security personnel. Unit-level consumables include: fuel, base maintenance supplies, and depot level reparables. Depot maintenance costs include: airframe and engine overhaul, repair of component parts, and some depot support activity. Sustaining support covers replacement support equipment, safety modifications, sustaining engineering, and software support.

(2) Indirect costs include: personnel support and installation support activities. Personnel support covers medical personnel and supplies, training (aircrew training system contracted support, maintenance trainer contract support, the formal flying school, undergraduate flying training, and other specialty training), and permanent change of station costs. Installation support covers base operating and real property maintenance personnel, and miscellaneous operating expenses.

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

b. Costs -- (FY 1981 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per C-17 Squadron	Avg Annual Cost for Antecedent System
Unit Mission Personnel	10.3	N/A
Unit-Level Consumables	42.5	N/A
Depot Maintenance	7.3	N/A
Sustaining Support	4.0	N/A
Indirect Support	22.3	N/A
Total	86.4	N/A

The O&S costs in the Dec 93 SAR were based on a 120 aircraft buy. Costs reported in this SAR are based on a total of 40 aircraft and are derived from the FY94 Program Office Estimate (120 aircraft).

The dollars represent O&S costs; budgets would be managed under DBOF-T. Manpower and aircraft costs for the Technical Training Unit are captured in the indirect support category. Manpower numbers reflect active duty and reserve requirements. The costs assume depot capability beginning in FY97 and full up in FY99, a steady-state situation under a 40 total aircraft scenario.

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 for intratheater operations.

c. Contractor Support Costs -- None.

A depot support recommendation will be presented within 90 days after the Milestone IIIB decision on C-17 fleet size. The Milestone IIIB is scheduled for Nov 95.

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

AS OF DATE: December 31, 1994

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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 Col John A. Goyette
SMC/CI Assigned: March 30, 1990
2420 Vela Way Suite 1467-A8 AV 833-4333 COMM (310) 336-4333
Los Angeles AFB, CA 90245-4659

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

RDT&E:

PE 0305160F

PROCUREMENT:

APPN 3020 ICN MS0554 (Air Force)

APPN 3080 ICN 833340 (Air Force)

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SAF/PAS

OATSD (PA) DFOISR 75-C-954

95-156 -T

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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 the Defense Meteorological Satellite Program (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, the Air Force Space Forecast 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. The first Block 5D-2 Improved satellite was launched in Nov 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 Dec 76. The program is a continuing program to support 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-S14; delivery of the satellites was completed in Nov 90. In Nov 91, satellite F11 (S-12) was launched from Vandenberg AFB. In Dec 91, F-11 was turned over to AFSPACCOM. In FY85 Headquarters Air Force directed the procurement of S-15. A contract for 5D-3 development spacecraft (S-15) was awarded in Jul 86; S-15 was delivered in Dec 91. Congress approved the multiyear procurement of five 5D-3 spacecraft in Sep 88; the contract was awarded in Jun 89. A multiyear procurement contract for four Operational Linescan Systems (OLS) was awarded in Jan 84; delivery of the sensors was completed in May 89. In Sep 88, a contract for five 5D-3 OLSs was awarded; two OLS sensors were delivered in FY93. A contract for Independent Software Verification and Validation was awarded in May 91. Congress approved transition from Atlas to Titan

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

II with Titan II initial launch capability in Oct 90.

Four Special Sensor Microwave Imager (SSM/I) and one Special Sensor Magnetometer (SSM) were delivered in CY89. In Mar 89, a contract for the Special Sensor Microwave/Imager Sounder (SSMIS) was awarded; Critical Design Review (CDR) was completed in Sep 91. The Special Sensor Ultraviolet Spectrographic Imager (SSUSI) and the Special Sensor Ultraviolet Limb Imager (SSULI) successfully completed CDR in Apr 92 and Jul 92, respectively. Two space environmental sensors were delivered for integration on the Block 5D-3 (S-16) spacecraft; the Precipitating Particle Spectrometer (SSJ5) was delivered in Oct 93 and the Plasma Monitoring System (SSIES-3) was delivered in Dec 93. The first Block 5D-3 Laser Threat Detection Sensor (SSF) was delivered in Dec 93.

In Jan 86, the Fairchild Satellite Operations Center (FSOC) contract was awarded. The Satellite Data Handling System (SDHS) was turned over to Air Force Global Weather Central (AFGWC) in FY86; a contract for SDHS shared processing was awarded in Sep 88; SDHS Site III turnover was accomplished in May 89. Program Management Responsibility Transfer (PMRT) of the C3 system occurred in Oct 88. PMRT of the SDHS and the Data Reconstruction Site to MAC occurred in Nov 89. This completed the turnover and transfer of all operational assets to the operating and supporting commands. The DMSP Integrated Weapon System Management (IWSM), Single Manager, Concept of Operations (CONOP) was signed in Jun 93. The DMSP IWSM Implementation Plan was approved on 22 Dec 93.

The contract for Mark IVB Tactical Terminals was awarded in Oct 88; IOT&E was completed in May 92. The production option for six fixed Mark IVB systems was exercised on 19 Jun 92. On 22 Dec 93, the first Mark IVB tactical weather terminal was delivered to McClellan Air Force Base. In Nov 90, two contracts for the procurement of Rapid Deployment Imagery Terminals (RDIT) were awarded; deliveries were completed in Jun 91. Two contracts for the development of a Small Tactical Terminal were awarded in Dec 92.

b. (U) Significant Developments Since Last Report --
In Feb 94, the Small Tactical Terminal Production Request for Proposal (RFP) was issued; the contract was awarded to Harris Corporation in Jun 94. Two Operational Linescan Systems (OLS) were delivered by Westinghouse Electric Corporation, OLS #19 for use on satellite S-18 in Mar 94 and OLS #21 delivered in Dec 94. In Mar 94 the Special Sensor Magnetometer #2 & #3 were delivered for integration onto satellites S-17 and S-18 and the first Special Sensor Ultraviolet Spectrographic Imager (SSUSI) was delivered for integration onto satellite S16. In May 94, the Special Sensor Laser

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

Threat Detector (SSF) was delivered. In Aug 94, a Request for Equitable Adjustment (REA) from Aerojet was received. The first Ultraviolet Limb Sensor (SSULI) was delivered in Oct 94. In Jun 94, the Program Office received a launch call for S-11/F-12; S-11/F-12 was launched from Vandenberg AFB in Aug 94; declared operational in Sep 94. Three Mark IVBs were turnover to the sites in FY94; the Guam Mark IVB, the Kadena AFB Mark IVB and Elmendorf AFB Mark IVB.

The DMSP is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --

In Jan 95, the OLS Follow-on Support and Service RFP was released and the Special Sensor Precipitating Electron Spectrometer (SSJ4) for S-13 was delivered. On 31 Jan 95, the first production Small Tactical Terminal (STT) was delivered.

8. (U) Threshold Breaches:

There are no breaches to the approved AFAC Acquisition Program Baseline (APB) dated Jan 5, 1993, and no Funn-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
S-12	N/A	SEP 90	OCT 89
S-13	N/A	JUN 91	AUG 90
S-14	N/A	JUN 92	NOV 90
S-15 (Block 5D-3)	N/A	SEP 93	DEC 91
Award of Block 5D-3 Multiyear Procurement	N/A	MAY 89	JUN 89

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

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Initial Titan II Capability	N/A	OCT 90	OCT 90
IOC 2/			
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
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

2/ 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.

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 AFSPACCOM. Delivery dates for Spacecraft S12-15 were 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 SD-3 multiyear contract slipped from Mar 89 to Jun 89 due to protracted negotiations. Satellite Required Availability dates were changed

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

from TBD to the delivery date for each spacecraft since these spacecraft have all been delivered and are available for launch. 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 when 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; an additional slip to Feb 93 resulted from problems encountered during thermal vacuum test. 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); a further slip from Jun 93 to Jul 95 resulted from the rescheduling of the Air Force Requirements Summit.

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

d. (U) References --

(U) Production Estimate:

PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:

AFAP Approved Acquisition Program Baseline dated January 05, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Satellite				
Altitude (+/-20 nm)	450	N/A / N/A	N/A N/A	450
Inclination (+/- .15 degrees)	98.7	N/A / 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

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

	PdE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
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 IV Transportable Tactical Terminals					
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
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)					
(w/Can2)					
Autonomous Operation (days)	N/A	60	/ 7	N/A	7

The Altitude parameter is 450 nautical miles with a difference between apogee and perigee of no more than 30 nautical miles.

The current estimate for the technical parameters represents

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

anticipated values based on current on-orbit satellite performance. Mean mission duration for both the 5D-2 Improved and 5D-3 spacecraft represent anticipated values and are based on current on-orbit performance of similar satellites.

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 Acquisition Program 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.

d. (U) References --

(U) Production Estimate:

PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:

AFAB Approved Acquisition Program Baseline dated January 05, 1993.

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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	236.8
Procurement	491.6	545.0	552.5
Launch Vehicle	(26.0)		(7.2)
Spacecraft	(201.3)		(221.3)
Primary Sensor	(79.6)		(89.1)
Mission Sensors	(57.1)		(76.7)
Support	(48.9)		(60.9)
Total Flyaway	(412.9)		(455.2)
Ground System	(58.0)		(85.2)
Field Level Support	(19.8)		(0.0)
Total Other Wpn Sys	(77.8)		(85.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.9)		(12.1)
Construction (MILCON)	2.6	3.0	2.7
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 75 Base-Year \$	718.7	772.9	792.0
Escalation	1160.3	1251.1	1298.6
Development (RDT&E)	(318.1)	(299.6)	(339.8)
Procurement	(839.1)	(948.2)	(955.8)
Construction (MILCON)	(3.1)	(3.3)	(3.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1879.0	2024.0	2090.6
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.

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 January 05, 1993.

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12. (U) Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (JAN 93 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY75\$)	792.0	772.9	
(2) Quantity	10	10	
(3) Unit Cost	79.200	77.290	2.471
b. (U) Procurement			
(1) Cost (BY75\$)	552.5	545.0	
(2) Quantity	9	9	
(3) Unit Cost	61.389	60.556	1.376

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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	-25.1	-113.0	-0.2	-138.3
Quantity	-	+190.2	-	+190.2
Schedule	-	+1.9	-	+1.9
Engineering	-13.6	-70.4	-	-84.0
Estimating	+15.0	+63.9	-	+78.9
Other	-	-	-	-
Support	+42.8	+71.5	+0.2	+114.5
Subtotal	+19.1	+144.1	-	+163.2
Current Changes:				
Economic	-0.2	-3.8	-	-4.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	22.4	33.9	-	+56.3
Other	-	-	-	-
Support	-7.3	3.4	-	-3.9
Subtotal	+14.9	+33.5	-	+48.4
Total Changes	+34.0	+177.6	-	+211.6
Current Estimate	576.6	1508.3	5.7	2090.6

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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	-2.3	-2.6	-	-4.9
Other	-	-	-	-
Support	+15.7	+18.1	+0.1	+33.9
Subtotal	+8.2	+51.9	+0.1	+60.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	6.6	8.5	-	+15.1
Other	-	-	-	-
Support	-2.5	0.5	-	-2.0
Subtotal	+4.1	+9.0	-	+13.1
Total Changes	+12.3	+60.9	+0.1	+73.3
Current Estimate	236.8	552.5	2.7	792.0

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

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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

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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; descope 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

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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	-0.2
Current and prior year adjustment for escalation (Estimating)	-0.2	-0.5
Current and prior year adjustment for actuals (Estimating)	-0.8	-2.1
Revised estimate for on orbit performance incentives (Estimating)	-0.2	-0.5
Revised estimate for spacecraft and sensor system engineering support. (Estimating)	+2.3	+6.9
Revised estimate for environmental sensor calibration/validation (Estimating)	-0.7	-2.3
Re-estimate to include FY 2001 in program estimate for Block 5 due to delay of follow-on program. (Estimating)	+6.2	+20.9
Revised estimate for ground segment support activities. (Support)	-1.7	-5.1
Revised estimate of Small Tactical Terminal (STT) development due to contract definitization. (Support)	-0.8	-2.2
RDT&E Subtotal	+4.1	+14.9
(2) Procurement		
Revised economic escalation rates (Economic)	N/A	-3.8

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment to current and prior year escalation. (Estimating)	+0.3	+1.4
Current and prior year adjustment for actuals. (Estimating)	-0.1	-0.2
Revised estimate of factory/field support efforts. (Estimating)	-0.3	-0.8
Revised estimate to include FY 2001 in program estimate for Block 5 due to delay in follow-on program. (Estimating)	+8.6	+33.5
Adjustment to current and prior year escalation. (Support)	+0.1	+0.4
Current and prior year adjustment for actual cost. (Support)	-2.1	-6.0
Revised allocation for initial spares. (Support)	-0.6	-1.8
Revision of Small Tactical Terminal production estimate due to budget limitations. (Support)	-1.9	-6.5
Revised estimate to include FY 2001 in program estimate for Block 5 due to delay of follow-on program. (Support)	+5.0	+17.3
Procurement Subtotal	+9.0	+33.5

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
208.78	-14.23	-1.86	0.19	-8.40	13.52	--	11.06	0.28	209.06

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

	Target	Initial Contract Price	
		Ceiling	Qty
a. (U) RDT&E --			
(U) SSMI/S:			
Aerojet ElectroSystems Co, Azusa, CA			
F04701-89-C-0036, FPIF/CP	\$62.1	\$66.3	3
Award: March 17, 1989			
Definitized: March 17, 1989			

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$104.2	\$115.7	5	\$115.7	\$115.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-28.6	\$-4.1
Cumulative Variances To Date (12/31/94)	\$-40.8	\$-4.1
Net Change	\$-12.2	\$0.0

Explanation of Change:

The change to the current target price and ceiling price is due to inclusion of potential award fees and on-orbit performance incentives as well as award fees earned.

Program Manager estimated price at completion decreased due to the contractor's failure to earn the award fee available during this period. 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 \$0.5M in award fees earned, \$2.0M 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 on-going level of effort activities in program management, systems/sustaining engineering, manufacturing engineering and production control to improve schedule performance. Additional contributors are: DC/DC converter rework and additional testing of the scan drive electronics; radiator panel rework; incorporation of thermal vacuum and vibration fixes; rework of the receiver boards on the equipment shelf resulting from mechanical stress problems; and system test troubleshooting. Integration has been delayed due to numerous noise problems uncovered during environmental testing and problems uncovered during EMI/EMC.

The contract is currently funded to ceiling price. The contractor has encountered numerous test failures during integration. The program is continually working with the program integrator to reduce the impact of late sensor delivery to satellite integration. The contractor has submitted a certified Request for Equitable Adjustment (REA) to the government for over 40.0M dollars. The government is currently evaluating the claim.

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

(U) 5D-3 OLS:			Initial Contract Price	
	Target	Ceiling	Qty	
Westinghouse Elec Corp, Baltimore, MD				
F04701-88-C-0118, FPIF/AF	\$55.0	\$61.1	2	
Award: September 19, 1988				
Definitized: September 19, 1988				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$123.3	\$135.8	5	\$124.0	\$124.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-4.9	\$-0.8
Cumulative Variances To Date (12/30/94)	\$-5.0	\$-1.5
Net Change	\$-0.1	\$-0.7

Explanation of Change:

The change to the current contract target price and ceiling price is due to inclusion of potential award fees and on-orbit performance incentives as well as award fees earned.

The change to the estimated price at completion is due to the contractor inability to accelerate delivery of the units. Included in the estimated price at completion is \$4.4M award fees earned, \$0.9M in potential award fees, and \$7.3M in potential on-orbit performance incentives.

The schedule variance results from the need to rebuild the Optical Relay Assemblies (ORA) and the Sensor Scanning Subsystem (SSS) and to repeat pre-vacuum and vacuum testing of both OLS 20 and OLS 21.

The cost variance is due to incorrect installation of the ORA Beam Splitter and the re-test associated with the fix.

There is no significant impact to the contract or to the program.

(U) 5D-3 SPACECRAFT:			Initial Contract Price	
	Target	Ceiling	Qty	
Martin Marietta Corp, Princeton, NJ				
F04701-89-C-0029, FPIF/AF	\$228.2	\$250.2	5	
Award: June 30, 1989				
Definitized: June 30, 1989				

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$302.1	\$328.6	5	\$302.1	\$306.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$6.0	\$-26.3
Cumulative Variances To Date (12/31/94)	\$0.9	\$-22.6
Net Change	\$-5.1	\$3.7

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 realtime data smooth transmitters as well as potential and earned award fees and potential on-orbit performance incentives.

The Program Manager's estimate at completion exceeds target price due to labor rate increases as well as problems associated with solar arrays, power supply electronics, and age-sensitive items; these problems are projected to cause a 9 month slip in the first unit delivery. Some of the schedule loss will be made up through parallel manufacturing of the other four spacecraft. The expected end date of the contract remains at Jun 98. The estimated price at completion includes \$3.4M in award fees earned, \$7.7M in potential future award fees, and \$16.9M in potential on-orbit performance incentives.

The decrease in the positive cost variance is due to labor rate increases and more support required than originally planned during this peak build cycle.

The negative schedule variance has improved due to the release of material to the manufacturing floor. While material issue has improved the total schedule variance, delays in the first spacecraft system test related to problems with the power supply electronics has caused first unit delivery to slip.

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

a. (U) Program Status --

- (1) Percent Program Completed: 70.0% (14 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 80.8% (\$1690.2 / \$2090.6)

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

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

Appropriation	Prior Years (FY82-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	451.9	21.5	19.4	83.8	576.6
Procurement	1232.6	45.1	40.6	190.0	1508.3
MILCON	5.7	-	-	-	5.7
O&M	-	-	-	-	-
Total	1690.2	66.6	60.0	273.8	2090.6

c. (U) Annual Summary --

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

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	16.8	4.9
1984				9.8	19.6	19.6	19.6	3.8
1985				18.4	37.9	37.9	37.0	3.4
1986				24.1	50.9	50.8	47.7	2.8
1987				26.6	58.8	58.8	51.2	2.7
1988				16.0	36.3	36.3	36.0	3.0
1989				19.0	45.3	45.3	45.3	4.2
1990				17.9	44.0	44.0	40.2	4.0

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1991				17.8	45.2	45.2	45.2	4.3
1992				9.6	25.1	25.1	25.1	2.8
1993				6.4	17.2	17.2	15.7	2.7
1994				6.9	18.8	18.8	11.5	2.0
1995				7.3	20.5	7.3		2.7
1996				7.4	21.5			3.0
1997				6.5	19.4			3.0
1998				6.5	20.1			3.0
1999				6.7	21.1			3.0
2000				6.6	21.7			3.0
2001				6.2	20.9			3.0
Subtot	1			236.8	576.6	438.6	406.8	

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Obligation and Expenditure information reflects official accounting records as of 31 Dec 94.

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (\$)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force

1982				7.0	14.4	14.4	14.4	9.6
1983	2	3.8	65.1	68.8	150.7	150.7	150.6	9.0
1984		3.7		13.3	30.3	30.3	30.3	8.0
1985	2	4.2	85.6	54.3	127.6	127.6	127.6	3.4
1986		4.0	17.1	16.1	39.5	39.5	39.5	2.8
1987		3.6		6.9	17.5	17.8	20.4	2.7
1988		2.7		25.8	68.5	68.5	64.0	3.0
1989	1	2.7	53.5	56.7	157.3	157.3	83.0	4.2
1990	1	5.2	47.8	41.5	117.4	117.4	102.0	4.0
1991	1	5.2	45.4	53.4	155.8	150.4	84.1	4.3
1992	2	4.8	86.3	34.5	102.1	98.0	79.4	2.8
1993		3.1		10.1	30.8	30.7	29.0	2.7
1994		2.0		9.9	30.9	27.6	13.3	2.0
1995		1.7		9.0	29.0	9.0		2.7
1996		1.5		8.8	29.3			3.0
1997		1.3		8.3	28.3			3.0
1998		1.3		8.6	30.2			3.0
1999		1.3		8.7	31.5			3.0

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2000		1.2		8.7	32.5			3.0
2001		1.1		9.1	34.9			3.0
Subtot	9	54.4	400.8	459.5	1258.5	1039.2	837.6	

FY 86 recurring amount is for primary and mission sensors for the development spacecraft (S-15). The amount shown for non-recurring cost is associated with the PFRDC support.

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Obligation and Expenditure information reflects official accounting records as of 31 Dec 94

Appropriation: 3080 Other Procurement, Air Force

1983				3.7	7.5	7.5	7.5	4.9
1984				6.3	13.1	12.6	12.6	2.7
1985				13.3	28.7	25.7	25.7	4.5
1986				4.1	9.3	4.9	4.9	2.8
1987				3.0	6.9	5.1	6.1	2.7
1988				4.3	10.4	8.8	8.8	3.0
1989				6.5	16.3	15.0	16.5	4.2

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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: 3080 Other Procurement, Air Force (Cont'd)

1990				0.5	1.2	0.8	0.8	4.0
1991				7.1	18.7	17.5	15.2	4.3
1992				2.9	7.9	6.6	3.4	2.8
1993				4.7	13.1	9.9	1.7	2.7
1994				4.2	12.1	8.4		2.0
1995				5.3	15.6	1.2		2.7
1996				5.2	15.8			3.0
1997				3.9	12.3			3.0
1998				4.4	14.2			3.0
1999				4.6	15.3			3.0
2000				4.5	15.5			3.0
2001				4.5	15.9			3.0
Subtot				93.0	249.8	124.0	103.2	

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Obligation and Expenditure information reflects official accounting records as of 31 Dec 94. Total Program dollars include initial spares in PE0305160F. Obligation and expenditure data for initial spares is not included due to unavailability of data.

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

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	54.4	400.8	792.0	2090.6	1607.5	1353.3	

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) -- To Date
RDT&E 1/1
Procurement 4/4

b. (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 DMSF 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.

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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 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 exist.

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

Funding	FY1995 & Prior	FY1996	FY1997	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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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: DSP

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
Defense Support Program - Strategic Surveillance
and Warning Satellite System (DSP)

CLEARED
FOR OPEN PUBLICATION

AS AMENDED

MAR 11 1995 20

2. (U) DoD Component: USAF

DIRECTORATE OF INTELLIGENCE INFORMATION
AND SECURITY (DDOIS/P)
DEPARTMENT OF DEFENSE

3. (U) Responsible Office and Telephone Number:

SMC/MT

185 Discoverer Blvd.

Suite 2512

Los Angeles AFB, CA 90245-4695

Col Craig P. Weston

Assigned: March 1, 1994

AV 833-1807 COMM (310) 363-1807

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)

SAF/PAS

95-165 -T

OATSD (PA) DFOISR 95-C-06

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

MILCON:

PE 0102431F, 0305911F

5. (U) Related Programs:

Jam Resistant Secure Communications Terminals (JRSCT); Military Satellite Communications System (MILSATCOM); Survivable Communications Integrated System (SCIS); Titan IV; Inertial Upper Stage (IUS); Attack and Launch Early Report to Theater (ALERT)/Talon Shield; Space Based Infrared System (SBIR)

(b)(1)



7. (U) Program Highlights:

a. (U) Significant Historical Developments --

(b)(1)



(U) In 1986, Flight 13 was demated from the Titan 34D booster due to the booster investigations caused by the previous booster disasters, the first time any satellite had been demated from its booster.

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

(U) The fixed ground stations have been modified with the Large Processing Stations Upgrade (LPSU) main computer replacement and the Peripheral Upgrade Program (PUP). The CGS accepted the PUP equipment in April 1987 and the OGS in September 1987.

(U) Flights (b)(1) have all been boosted into super-synchronous orbit. Flights (b)(1) in conjunction with CGS, OGS, and EGS ground stations provided timely warning of SCUD launches to allied forces and Patriot Missile Batteries during Desert Storm. Flight 16 was the first launch of a DSP Satellite on STS-44 from the shuttle Discovery in Nov 91.

(U) Directed survivability enhancements in the systems include the following: (1) Mobile Ground System (MGS), (2) a Mission Data Message rebroadcast capability, (b)(1) and (4) increased system autonomy.

(U) Starting with Flight 12 in December 1984, all sensors have undergone Sensor Evolutionary Development (SED) improvements intended to prolong useful life, increase survivability, increase the viewing area, and increase the accuracy of each Satellite.

(U) The SPO has turned over to Air Force Space Command (AFSPC) all MGS's.

(U) The Central Tactical Processing Program (CTPP) was formed to support the Talon Shield Program and exploit tactical performance capabilities. The Data Control Subsystem (DCS) for Satellite 16 began working operationally in February 1992. The Upgraded Mobile Ground Terminals 3 and 4 were delivered in August 1992.

(U) The System 1 Research, Development, Test & Evaluation (RDT&E) and the System 1 Delivery to CGS (Shelter Installation) contract was terminated for convenience by the government on 15 December 1992.

(U) The DSP Program Office consolidated with the Follow on Early Warning System (FEWS) Program Office to form the new Space Based Early Warning System Program Office in April 1993.

(U) DSP awarded a contract for a multi-year procurement of Satellites 23-25 in FY93.

(U) The Satellite Readout Station Upgrade (SRSU) contract has been restructured to accommodate additional Government test and acceptance activities. Testing was stopped 26 Jun 93 due to several deficiencies.

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

(U) The Laser Crosslink System was terminated due to the change of requirements by the user, AFSPC.

(U) The Mobile Ground Systems delivered Mobile Ground Terminal's 5 & 6 to the site on 8 Sep 93.

(U) The build version of 9.0 software for the Talon Shield Central Tactical Processing Element has been completed and was installed at the National Test Facility (NTF). Full system testing was completed on 27 Jan 94.

(U) Based on AFSPC direction, in the spring of 1991 launch dates were extended from 6 month to 12 month centers, which necessitated the Block 18 restructure. The original Multi-year procurement contract was for six month launch centers.

b. (U) Significant Developments Since Last Report --

(U) The changes to the Acquisition Program Baseline (APB) were approved and signed 30 Mar 94 by the Service Acquisition Executive (SAE). The changes made were the termination of the Laser Crosslink System requirement and the adjustment to the Satellite Readout Station Upgrade (SRSU) Installation and Checkout (I&C) schedule milestone.

(U) Due to budget reduction and program requirement changes, Satellites 25 and 24 were cancelled on 11 Mar 94 and 30 Jun 94 respectively. As a result of the cancellation, Aerojet delivered a Request for Equitable Adjustment (REA) Proposal for Sensor 23 on 22 Dec 94. Aerojet claims that with the cancellation of Sensor 24 and 25, they are unable to complete Sensor 23 with the funds remaining on contract. Aerojet submitted an additional proposal on 5 Jan 95. This proposal is a complete bottoms up proposal for production of Sensor 23.

(U) Air Force Space Command (AFSPC) declared the SRSU Continental United States (CONUS) Ground Station's antenna #2 operational on 22 June 1994.

(U) On 22 Dec 94, DSP Flight 17 was launched by the 45 Space Wing from Cape Canaveral AFS, FL.

(U) Attack and Launch Early Report to Theater (ALERT) Initial Operating Capability (IOC) slipped to late February 95 due to problems with the software operating system and the fiber optic Local Area Network (LAN). This problem has since been rectified.

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

The DSP system is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --

(U) Flight 17 Early On-Orbit Testing was successfully completed on 15 Jan 95 and it is in transit to its operational location.

8. (U) Threshold Breaches:

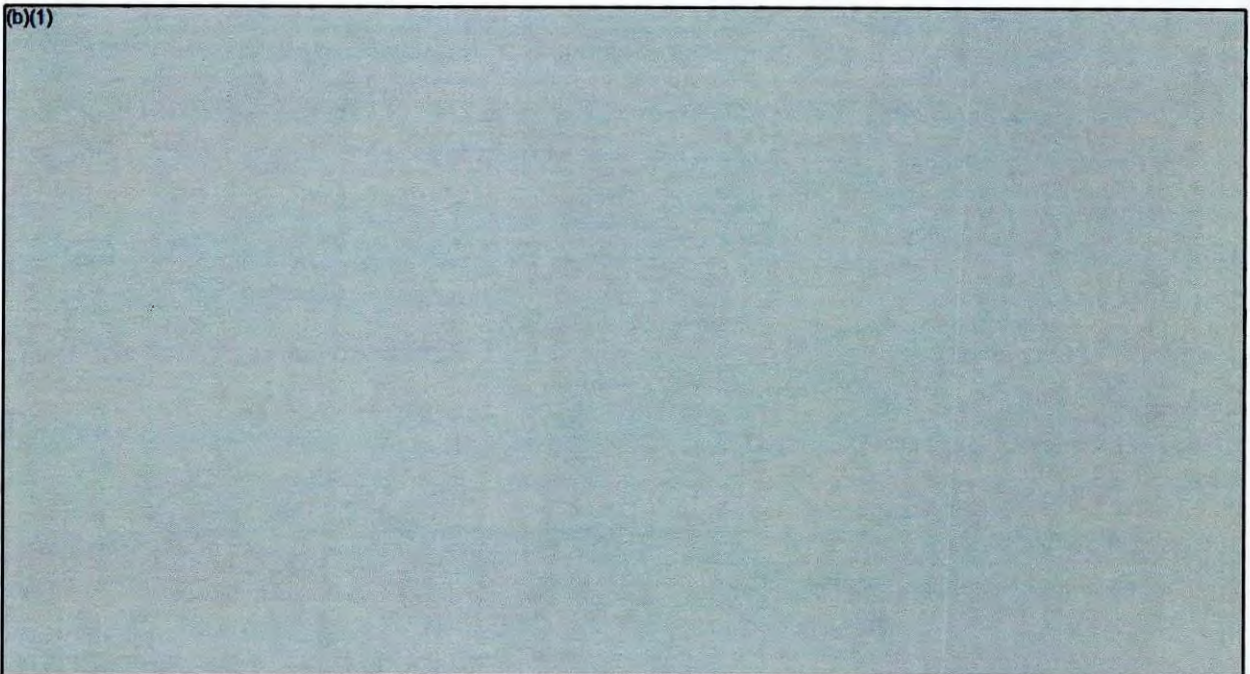
There are no breaches to the Air Force Acquisition Executive (AFAE) Acquisition Program Baseline (APB) (dated 30 March 1994). There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

Development Estimate	Approved Program	Current Estimate
-------------------------	---------------------	---------------------

(b)(1)



b. (U) Previous Change Explanations --

(b)(1)

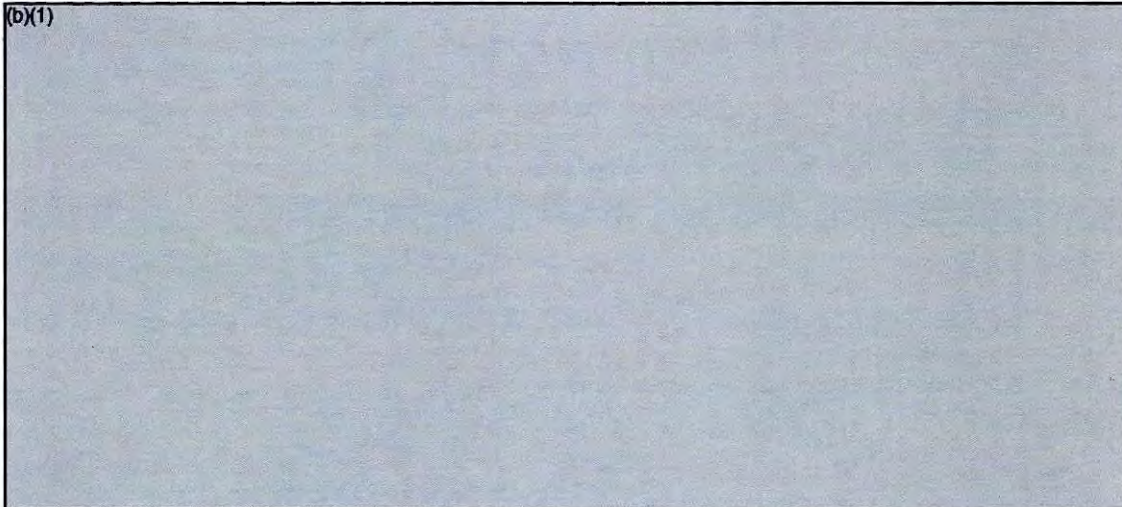


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9b

(b)(1)



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

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:

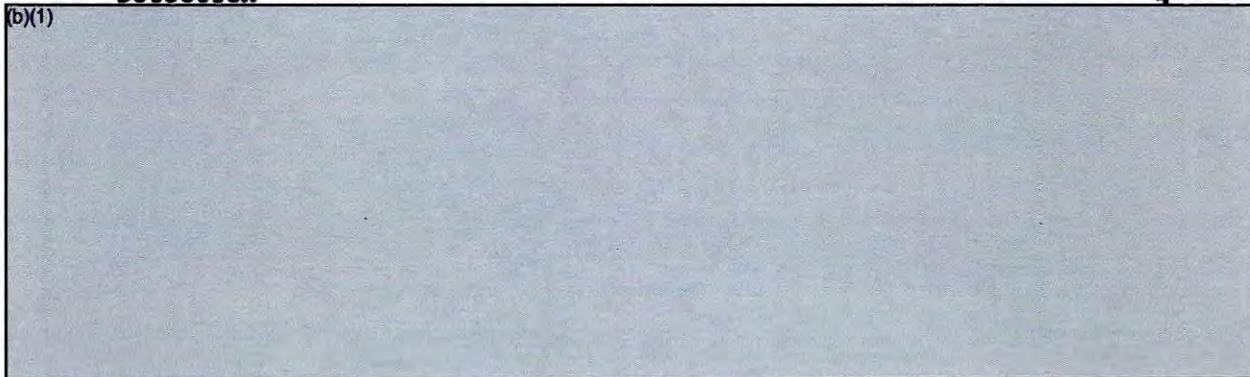
AFAE Approved Acquisition Program Baseline dated March 30, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

Probability of
Detection

(b)(1)



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

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

~~(S)~~ ACRONYMS:

(b)(1)

b. (U) Previous Change Explanations --

(b)(1)

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

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

d. (U) References --

(U) Development Estimate:

FMD # 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:

AFAP Approved Acquisition Program Baseline dated March 30, 1994.

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)	1304.3	1618.3	1681.6
Procurement	3094.6	4307.2	4248.3
Flyaway	(2364.4)		(3350.2)
Other Weapon Systems	(730.2)		(0.0)
Peculiar Support	(0.0)		(898.1)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.7	25.5	25.5
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 78 Base-Year \$	4424.6	5951.0	5955.4
Escalation	1123.0	3189.6	3174.1
Development (RDT&E)	(-30.4)	(263.6)	(386.1)
Procurement	(1151.6)	(2924.0)	(2786.0)
Construction (MILCON)	(1.8)	(2.0)	(2.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	5547.6	9140.6	9129.5
b. (U) Quantity --			
Development (RDT&E)	4	4	4
Procurement	15	21	19
Total	19	25	23

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

FMD # NO.R-S 4047 (24) Oct 18, 1983; SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984. FY85 RDT&E Descriptive Summaries, January,

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11e. (U) Total Program Cost and Quantity (Cont'd):
1984.

(U) Approved Program:
APAE Approved Acquisition Program Baseline dated March 30, 1994.

12. (U) Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (MAR 94 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY78\$)	5955.4	5951.0	
(2) Quantity	23	25	
(3) Unit Cost	258.93	238.04	8.78
b. (U) Procurement			
(1) Cost (BY78\$)	4248.3	4307.2	
(2) Quantity	19	21	
(3) Unit Cost	223.59	205.10	9.01

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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	1273.9	4246.2	27.5	5547.6
Previous Changes:				
Economic	-11.0	-95.4	-0.1	-106.5
Quantity	-	+1365.6	-	+1365.6
Schedule	+0.4	+156.2	-	+156.6
Engineering	-	-	-	-
Estimating	+604.0	+896.2	+0.1	+1500.3
Other	-	-	-	-
Support	+289.4	+473.9	-	+763.3
Subtotal	+882.8	+2796.5	-	+3679.3
Current Changes:				
Economic	0.8	-9.7	-	-8.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-89.8	121.8	-	+32.0
Other	-	-	-	-
Support	-	-120.5	-	-120.5
Subtotal	-89.0	-8.4	-	-97.4
Total Changes	+793.8	+2788.1	-	+3581.9
Current Estimate	2067.7	7034.3	27.5	9129.5

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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	-	+678.4	-	+678.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+268.7	+275.9	-0.2	+544.4
Other	-	-	-	-
Support	+149.1	+213.3	-	+362.4
Subtotal	+417.8	+1167.6	-0.2	+1585.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-40.5	31.5	-	-9.0
Other	-	-	-	-
Support	-	-45.4	-	-45.4
Subtotal	-40.5	-13.9	-	-54.4
Total Changes	+377.3	+1153.7	-0.2	+1530.8
Current Estimate	1681.6	4248.3	25.5	5955.4

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 Mobile Ground Terminal (MGT). Reprogramming of FY90-92 funds due to delay of System 1. Revised estimate due to

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

cancellation of DSP-2 upgrade. Restoration of fixed and mobile ground efforts. Transfer of funding from DSP to FEWS program. Additional funding for continued ground system research and development program. Reduced ground software development. Additional requirement for consolidation of ground stations. Additional funding for Talon Shield upgrades. Reduction of FFRDC and non-FFRDC contractor support. Refinement of program estimate.

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. Economic adjustment for negative program change.

Quantity: Acquisition of additional satellites in FY89-93. Decrease of one satellite from 26 to 25. Decrease of an additional 2 Satellites from 25 to 23.

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. Refinement of program estimate. Reduction of sensor engineering services and orbital support services. Additional requirement for continued on-orbit support funding. Decreased funding to support FEWS program. Additional requirement for software changes. Refinement of program estimate to reflect change of Block 23 Satellites. Adjustment of FY93 funds to reflect actual costs. Refinement of program estimate to reflect actual Satellite 23 buy. Reduction of sensor engineering services and orbital support services. Correction of a previous variance categorization.

Support: Inclusion of previously deleted logistics items to support ground systems, support of additional satellite in FY90-93. Ground Station hardware,

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

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. Increase in initial spares requirement. Logistic modifications to existing ground stations. Reduced Aerospace MTS support. Refinement of Peculiar Support Equipment estimate. Additional requirement for initial spares, peculiar support equipment, and other weapon systems support items. Adjustment of FY93 funds to reflect actual costs. Increase for requirement of consolidated ground stations. Correction of a previous variance categorization.

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 escalation indices. (Economic)	N/A	-0.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.9
Adjustment for Current & Prior Inflation. (Estimating)	-0.6	-1.0
Program reduction for ALERT operations and support requirement (Estimating)	-7.9	-19.5
Reduction for program realignment for Base Operating Support requirements (Estimating)	-0.9	-2.1

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Zero Base Transfer to ALARM program for follow on early warning requirement (Estimating)	-12.6	-31.1
Reduction of ECO risk (Estimating)	-8.2	-19.6
Consolidated ground requirement realignment to new SBIR program (Estimating)	-36.5	-88.1
Reduction of funds resulting in reduced sensor engineering support (Estimating)	-0.5	-1.1
Refinement of program estimate for continued research and development program (Estimating)	+28.3	+75.9
Reduction of funds resulting in reduced sensor engineering support (Estimating)	-1.6	-3.2
RDT&E Subtotal	-40.5	-89.0
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-16.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+7.0
Adjustment for Current & Prior Inflation. (Estimating)	+3.4	+8.5
Zero Base Transfer to ALARM program for follow on early warning requirement (Estimating)	-23.9	-62.4
Reduction to fund follow on early warning requirements for Technology Demonstration/ Quick Reaction Capability (Estimating)	-33.5	-90.0
Reduction of funds resulting in reduced sensor engineering support (Estimating)	-12.5	-34.0
Consolidated ground requirement realignment to new SBIR program (Estimating)	+5.4	+15.1
Funds realignment for changing program to 12 month launch centers (Estimating)	-13.3	-36.8
Reduction of ECO risk (Estimating)	-1.1	-2.6
Additional funding for continued on-orbit support funding (Estimating)	+107.0	+324.0
Adjustment for Current & Prior Inflation. (Support)	+0.3	+1.2
Transfer of spares to operational command (Support)	-22.8	-60.0

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Consolidated ground requirement realignment to new SBIR program (Support)	-29.8	-80.1
Increase for ALERT ICS (Support)	+5.5	+13.8
Reduction of ECO risk (Support)	-0.8	-2.0
Additional funding for continued on-orbit support funding (Support)	+2.2	+6.6
 Procurement Subtotal	 -13.9	 -8.4

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
291.979	-5.017	8.594	6.809	--	66.622	--	27.948	104.956	396.935

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

a. (U) RDT&E --

(U) Sat Read-Out Sta Upgrade:

LORAL, Boulder, CO

F04701-89-C-0072, FPI/CPF

Award: July 14, 1989

Definitized: July 14, 1989

Initial Contract Price		
Target	Ceiling	Qty
\$28.1	\$28.1	0

Current Contract Price		
Target	Ceiling	Qty
\$101.3	\$112.5	0

Estimated Price At Completion	
Contractor	Program Manager
\$104.8	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-34.7	\$-4.6
Cumulative Variances To Date (12/23/94)	\$-33.4	\$0.1
Net Change	\$1.3	\$4.7

Explanation of Change:

The Contractor's Estimated Price at Completion of \$104.8M differs from the Estimated Cost at Completion of \$131.3M reported in the previous DAES. This reflects the effect of ceiling price on the FPIF

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

position of the contract, with the contractor incurring a \$26.5M loss on the contract. The Contractor has requested several equitable adjustments now under evaluation. The Program Manager's Estimated Price at Completion is not available due to pending negotiations.

The Current Contract Price has increased due to the addition of Interim Contractor Support (ICS) and revised user requirements.

The net variance changes resulted from work resumed in February 1994 after a stop work order in November 1993. Since then, the contract has been undergoing realignment to new schedule and user requirements. Installation, testing, and turnover of the first antenna at the first location (CONUS Ground Station) was accomplished, however most of the schedule recovery was from the incorporation of revised program schedules. The cost variance did get worse slightly due to test and engineering changes in the detail design. Due to these changes, associated system support efforts and costs increased. Revised user requirements and schedules have led to several contract changes which are currently awaiting negotiations. While there are delays in the expected turnover dates to the user, there is no impact to the contract or program.

			Initial Contract Price		
(U) Ground Station Operation:			Target	Ceiling	Qty
LORAL, Boulder, CO					
FO4701-91-C-0088, CPAF			\$28.3	\$28.3	0
Award: October 1, 1991					
Definitized: October 1, 1991					

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$105.5	\$105.5	0	\$97.2	\$97.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$3.9	\$0.0
Cumulative Variances To Date (12/23/94)	\$6.3	\$0.2
Net Change	\$2.4	\$0.2

Explanation of Change:

The Current Contract price and Estimated Price at Completion increased from last year's because Option 3 of the contract was exercised. This option extended the contract on year.

The favorable cost variance is due to computer support having less work effort than planned, work stoppage on the AUTOID tool, and personnel shifts from technical studies to cover Early Orbit Testing support. The net change in schedule variance is due to the replanning

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15. (U) Contract Information (Cont'd):
of the Survivable Communications Integration System (SCIS) effort.
There is no impact to the contract or program.

b. (U) Procurement --

			Initial Contract Price	
(U) Satellites 18-22:	Target	Ceiling	Qty	
TRW Space & Defense, Redondo Beach, CA				
F04701-86-C-0022, FPI	\$743.5	\$782.5	5	
Award: July 30, 1987				
Definitized: July 30, 1987				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$696.0	\$733.7	5	\$675.2	\$639.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-34.1	\$-0.4
Cumulative Variances To Date (12/30/94)	\$-50.9	\$-0.1
Net Change	\$-16.8	\$0.3

Explanation of Change:

The lower Current Contract Price and the Estimated Price at Completion reflect the Laser Crosslink System (LCS) termination.

The Cost Variance increase is due to the Service Center computing rates higher than originally planned, higher indirect rates, increase in Level of Effort (LOE) Program Support due to extension of satellite delivery dates. This is a result of the Laser Crosslink System (LCS) delivery problems and other hardware problems, new material requirements and various redesign and hardware problems such as VIA bolt, IPADs, VIA nut plate, solar array hinge, mirror panels and platforms. The Schedule Variance improvement is due to the LCS termination and raw materials needed were easier to procure than expected. There is no impact to the contract or program.

(U) Satellites 23-25:

			Initial Contract Price		
Target	Ceiling	Qty	Target	Ceiling	Qty
TRW Space & Defense, Redondo Beach, CA					
F04701-93-C-0001, FPI			\$619.3	\$653.4	3
Award: June 11, 1993					
Definitized: June 11, 1993					

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$619.3	\$653.4	1	\$616.8	\$347.6

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.8	\$-0.6
Cumulative Variances To Date (12/30/94)	\$4.2	\$-0.8
Net Change	\$5.0	\$-0.2

Explanation of Change:

The Program Manager's Estimated Price at Completion includes the removal of projected figures for the cancellation of Satellites 24 and 25 as well as the termination of LCS. The contractor's EAC costs do not reflect these changes pending the negotiations on cancellation of Sensors 24 and 25.

The cost variance reflects procurement of components under projected costs. The schedule variance is insignificant. There is no impact to the contract or the program.

(U) Sensors 23-25: Gencorp, Aerojet, Azusa, CA F04701-93-C-0002, FPI/AF/CP Award: June 11, 1993 Definitized: June 11, 1993	Initial Contract Price		
	Target	Ceiling	Qty
	\$485.6	\$507.1	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$485.6	\$507.1	1	\$485.6	\$329.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.3	\$-0.4
Cumulative Variances To Date (12/22/94)	\$0.4	\$1.5
Net Change	\$0.1	\$1.9

Explanation of Change:

The net cost changes resulted from the quantity which was reduced from three to one. The contractor's EAC costs do not reflect these changes pending the negotiations on cancellation of Satellites 24 and 25.

The positive schedule variance is due to major subcontractor performance being accomplished ahead of schedule. The Cost variance is insignificant. There is no impact to the contract or program.

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

a. (U) Program Status --

(1) Percent Program Completed: 82.9% (29 yrs/35 yrs)

(2) Percent Program Cost Appropriated: 87.8% (\$8016.2 / \$9129.5)

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

Appropriation	Prior Years (FY67-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	1834.2	43.7	38.8	151.0	2067.7
Procurement	6154.5	139.8	91.3	648.7	7034.3
MILCON	27.5	-	-	-	27.5
O&M	-	-	-	-	-
Total	8016.2	183.5	130.1	799.7	9129.5

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

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

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

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
1976				18.2	16.4	16.4	16.4	7.0
1977								
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				64.8	115.4	115.4	115.4	2.7
1988				48.9	89.4	89.4	89.4	3.0
1989				52.0	99.8	99.8	93.6	4.2

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1990				45.4	89.7	89.7	85.1	4.0
1991				34.7	71.2	71.2	59.4	4.3
1992				24.2	51.1	51.1	47.1	2.8
1993				22.1	47.7	45.8	42.9	2.7
1994				21.3	46.9	36.5	16.3	2.0
1995				29.1	66.1	14.5	0.2	2.7
1996				18.7	43.7			3.0
1997				16.1	38.8			3.0
1998				15.3	37.9			3.0
1999				14.7	37.7			3.0
2000				14.1	37.2			3.0
2001				14.1	38.2			3.0
Subtot	4			1681.6	2067.7	1770.3	1706.3	

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

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

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
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		583.7	273.5	478.1	478.1	478.1	9.0
1984	2		583.7	239.5	436.6	436.6	436.6	8.0
1985				28.3	53.0	53.0	53.0	3.4
1986				56.7	111.4	111.4	111.4	2.8
1987				126.9	259.8	259.8	259.8	2.7
1988	1		130.5	166.5	353.4	352.4	330.4	3.0

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (\$)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1989	2		261.1	194.1	430.4	430.4	385.5	4.2
1990	1		130.5	152.1	343.5	343.5	256.9	4.0
1991	1		130.5	140.0	326.3	312.4	264.5	4.3
1992				27.3	64.4	52.2	30.1	2.8
1993				85.0	206.2	155.1	102.3	2.7
1994	1		682.4	140.4	350.3	319.9	79.3	2.0
1995				140.7	361.4	233.5		2.7
1996				38.9	102.9			3.0
1997				31.9	86.9			3.0
1998				69.9	196.1			3.0
1999				41.2	119.2			3.0
2000				51.0	151.8			3.0
2001				56.1	172.2			3.0
Subtot	19		3350.2	3350.2	5824.8	4759.2	4008.8	

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

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

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								
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	3.9
1985				29.9	51.4	51.4	51.4	3.4
1986				71.9	128.9	128.9	128.9	2.7
1987				48.3	89.8	89.8	89.8	2.7

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

1988				13.8	26.6	25.5	23.6	3.0
1989				0.9	1.8	1.8	1.8	4.2
1990				34.5	71.0	67.3	63.9	4.0
1991				35.1	74.2	70.2	54.2	4.3
1992				26.6	58.0	56.0	32.5	2.8
1993				17.0	37.7	35.4	27.1	2.7
1994				12.4	28.4	26.3	10.1	2.0
1995				10.2	23.9	4.1		2.7
1996				15.2	36.9			3.0
1997				1.8	4.4			3.0
1998				1.2	3.2			3.0
1999								3.0
2000				1.2	3.3			3.0
2001				1.0	2.9			3.0
Subtot				898.1	1209.5	1123.8	1050.4	

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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: 3300 Military Construction, Air Force

1975				19.6	17.3	17.3	17.3	8.5
1976								
1977								
1978								
1979								
1980								
1981								
1982								
1983				1.1	1.9	1.9	1.9	4.9
1984								
1985				4.8	8.3	8.3	8.3	3.4
Subtot				25.5	27.5	27.5	27.5	
Grand Total	23		3350.2	5955.4	9129.5	7680.8	6793.0	

Obligation and Expenditure information reflects official accounting records as of 19 Jan 95.

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17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --	To Date
RDT&E	4/4
Procurement	14/14

b. (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. O&S data is of 30 Jan 95.

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	28.9	N/A
Total	28.9	N/A

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

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M (Air Force)	64.6	8.1	8.5	---	81.2
Industrial Fund	---	---	---	---	---
Total	64.6	8.1	8.5	---	81.2

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

PROCUREMENT:

APPN 2032 ICN C98500 (Army)
APPN 2032 ICN C98501 (Army)
APPN 2032 ICN C98502 (Army)
APPN 2032 ICN C98510 (Army)
APPN 2032 ICN CA0261 (Army)

MILCON:

PE 024030

5. (U) Related Programs:

Army TACMS Smart Submunition Warhead; Fire Direction Data Manager (FDDM); Multiple Launch Rocket System (MLRS); Improved Fire Control System M270 (IFCS); Joint Precision Strike Demonstration (JPSD); Brilliant Anti-Armor Submunition (BAT); BAT Pre-Planned Product Improvement (BAT PPI); Block II; Block IIA; Advanced Field Artillery Tactical Data System (AFATDS); and a Navy Cooperative effort for Navy TACMS Advanced Technology Demonstration.

6. (U) Mission and Description:

The Army Tactical Missile System (Army TACMS) Block I is a ground-launched missile system consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. The Improved Army TACMS (Block IA) integrates global positioning system (GPS) components and increases range of the Block I missile. The inherent GPS accuracies will be achievable independent of range. 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

TEST SET, GUIDED MISSILE SYSTEM

TRAINING SET, GUIDED MISSILE SYSTEM: M165

TRAINER, TEST DEVICE, GUIDED MISSILE: M70

Modified M270 Launcher

Army TACMS Missile Facilities:

The Army TACMS provides a deep fires missile system that operates in near all-weather conditions, day or night. It is used to attack tactical surface-to-surface missile sites, air defense missile sites, logistics elements and command/control/communication complexes. The Block IA missile will destroy high value targets at ranges approximately twice that of the current Block I missile. The Block IA missile will be especially suited for destroying enemy surface-to-surface missile system launchers.

Army TACMS Block I replaces the conventional Lance system and the Army TACMS Block IA does not replace another defense system.

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7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Army TACMS Missile System resulted from a need to engage high priority targets at ranges beyond those of existing weapons. In Jun 82, DOD directed the merger of similar service programs into a joint development designated as the Joint Tactical Missile System (JTACMS). In 1984 a joint service decision was made to abandon efforts to develop a common missile and the Army's efforts continued as Army TACMS. The Required Operational Capability (ROC) was approved in May 85, and Army TACMS entered full-scale development (FSD) in Mar 86. Army TACMS LRIP-I and LRIP-II were accelerated during Sep 90 in order to support Operation Desert Shield/Desert Storm. On 2 Nov 90, Army TACMS was granted approval to proceed to Milestone III, full-rate production (FRP), by the Defense Acquisition Board (DAB). The Army TACMS Test and Evaluation Master Plan (TEMP) was approved in Aug 91. Five follow-on production test (FPT) flights (Nos. 2-6) were completed in Sep 92. The Block I production buy was split and stretched as directed by a Strategic Systems Committee (SSC)/Conventional Systems Committee (CSC) in Feb 93, resulting in approval for the Block IA program. The FRP IV production contract was restructured to stretch out the FY94 missile buy, adding 50 Block I missiles in FY96, increasing the procurement program to 1647. Options for FY95, FY96, and FY97 were included. The Block IA procurement program added an additional 800 missiles. The Block IA Program Milestone IV/II Review was conducted in Feb 94, and the Army Systems Acquisition Review Council (ASARC) approved the program for Engineering and Manufacturing Development (EMD) as well as the exit criteria for the subsequent production decision review.

b. (U) Significant Developments Since Last Report --

The 100th Army TACMS Missile, SRP-7 was launched on 9 Jun 94. This was a quick-fire mission which successfully impacted the target area. On 30 Jun 94, the Principal Deputy Under Secretary of Defense directed that the Army TACMS Block I and Block IA Programs be combined as an Acquisition Category (ACAT)IC Major Defense Acquisition Program (MDAP) for reporting purposes. Three flight tests of a prototype Block IA missile were conducted in support of the FY94 Joint Precision Strike Demonstration (JPSD) on 14 Oct, 21 Nov and 7 Dec 94. The objectives of the demonstration included demonstrating pre-launch initialization of the missile, successfully executing inflight GPS-aided navigation and proving the extended range capability of the missile. All test objectives were achieved. Production deliveries remain 3 ahead of schedule. Due to DOD directed funding reductions and restructure, the Army TACMS/APAM (Block IA) program has been restructured to accommodate two LRIP buys instead of one as reflected in the approved APB, dated 8 Feb 94.

Army TACMS/APAM (Block IA) is expected to satisfy the mission requirements.

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

c. (U) Changes Since As Of Date --

The firing of a prototype Block IA missile was successfully conducted at WSMR on 11 Jan 95 in support of the Naval Surface Fire Support Advance Technology Demonstration (ATD). The program is jointly managed by PEO Tactical Missiles and Naval Sea Systems Command (NAVSEA). The primary goal of this ATD is to demonstrate the capability to launch a modified Army TACMS missile from an M270 launcher on a sea-going platform and successfully engage a land target, and to assess the feasibility of adapting Army TACMS to meet the Navy's long range surface fire support requirements. The first "at-sea" launch of an Army TACMS Missile was successfully conducted on 12 Feb 95.

8. (U) Threshold Breaches:

There are schedule breaches to the Acquisition Program Baseline (APB) dated 8 Feb 94. A Program Deviation report and a revised APB have been completed and transmitted to the Army Acquisition Executive. There are currently no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Army TACMS Block I			
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
FSD Contract Award	MAR 86	MAR 86	MAR 86
EDT-C			
Start	MAR 86	MAR 86	MAR 86
Complete	FEB 89	FEB 89	FEB 89
Depot Service Support	N/A	JUN 87	JUN 87
Long Lead Time Items Contract Option	MAY 88	MAY 88	MAY 88
Award			
DA Program Review (ASARC IIIA)	FEB 89	JAN 89	JAN 89

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

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	JUN 90	JUN 90
First Unit Equipped	AUG 90	AUG 90	AUG 90
Initial Operational Capability (IOC)	OCT 90	AUG 90	AUG 90
Milestone III (DAB)	OCT 90	NOV 90	NOV 90
Organic Support Capability	N/A	NOV 90	NOV 90
Full-Rate Production Contract Award	NOV 90	NOV 90	NOV 90
Prod Verification Test (if required)			
Start	NOV 90	NOV 90	NOV 90
Complete	MAY 91	JAN 91	JAN 91
First Full Rate Production Delivery	OCT 91	MAY 91	MAY 91
Full-Rate Production-II Contract Award	N/A	DEC 91	DEC 91
First Full-Rate Production-II Delivery	N/A	SEP 92	SEP 92
Army TACMS Block IA			
Milestone IV-Preplanned Product Improvement (P3I) Anti-Personnel/ Anti-Materiel (APAM)	N/A	FEB 94	FEB 94
P3I APAM Engineering and Manufacturing Development (EMD) Contract Award	N/A	FEB 94	MAR 94
Critical Design Review	N/A	JUN 95	JUN 95
Production Prove-Out Test (PPT)			
Start	N/A	JUN 95	JUN 95
Complete	N/A	JAN 96	JAN 96
Pre-Production Qualification Tests (PPQT)			
Start	N/A	JAN 96	JAN 96
Complete	N/A	JUN 96	JUN 96
LRIP Decision	N/A	MAR 96	MAR 96
Operational Test & Evaluation			
Start	N/A	MAR 96	MAR 96
Complete	N/A	JUN 96	JUN 96

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

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
LRIP II Contract Award	N/A	N/A	DEC 96(Ch-1)
P3I APAM Production Decision	N/A	JAN 97	OCT 97(Ch-1)
Full-Rate Production (FRP) Contract Award	N/A	MAR 97	DEC 97(Ch-1)
LRIP Delivery	N/A	AUG 97	AUG 97
Organic Support Capability	N/A	SEP 97	SEP 97
Depot Service Support	N/A	SEP 97	SEP 97
Initial Operational Capability (IOC)	N/A	FEB 98	FEB 98
First FRP Delivery	N/A	AUG 98	MAY 99(Ch-1)

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. Organic Support Capability - Nov 90, Depot Service Support - Jun 87, LRIP Delivery - Aug 97, were added to Feb 94 APB. DA Program Review (ASARC IIIA) - Jan 89, and First Full-Rate Production-II Delivery - Sep 92, are shown as actual dates.

c. (U) Current Change Explanations --

(Ch-1) Funding constraints required a schedule slip in the following milestones:

1. LRIP II CONTRACT AWARD - was added to allow for two P3I APAM LRIP buys in Dec 96, instead of one, as reflected in the current approved APB.
2. P3I APAM PRODUCTION DECISION - From Jan 97 in the Dec 93 SAR to Oct 97 in the Dec 94 SAR.
3. FULL-RATE PRODUCTION CONTRACT AWARD - From March 97 to Dec 97.
4. FIRST FRP DELIVERY - From Aug 98 to May 99.

d. (U) References --

(U) Production Estimate:

DCP, dated 15 Sep 90, subject: "Army Tactical Missile System Block I," based on Milestone III (DAB) decision.

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

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated February 08, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Guided Missile and Launching Assembly: M39 (GMLA) End PPQT	N/A	.85 / .82	TBD	.82

(b)(1)

b. (U) Previous Change Explanations --

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:

AAE Approved Acquisition Program Baseline dated February 08, 1994.

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

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	650.6	734.6	732.4
Procurement	846.4	1565.8	1607.3
Flyaway	(821.2)		(1579.6)
Other Weapon Systems	(22.9)		(11.1)
Peculiar Support	(0.0)		(13.4)
Initial Spares	(2.3)		(3.2)
Construction (MILCON)	9.6	10.0	9.9
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 91 Base-Year \$	1506.6	2310.4	2349.6
Escalation	1.6	198.4	214.5
Development (RDT&E)	(-89.3)	(-76.7)	(-76.5)
Procurement	(90.0)	(274.6)	(290.4)
Construction (MILCON)	(0.9)	(0.5)	(0.6)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1508.2	2508.8	2564.1
b. (U) Quantity --			
Development (RDT&E)	15	18	18
Procurement	1542	2447	2447
Total	1557	2465	2465

Note: Excludes 35 RDTE prototypes from the SAR Baseline and 42 from the Current Estimate that are not considered fully configured.

The original LRIP Block I decision dated Jan 89 was only for one year with a total quantity of 66. There was a second LRIP Block I decision, dated Dec 89, with a quantity of 104.

The Block IA Milestone IV/II decision provided for one LRIP of 100 missiles in FY96 which exceeded the ten percent guideline established in 10 U.S.C. 2400 (FASTA). The reasoning was that it eliminated the need for long leadtime items and a fourth quarter award in FY96. Subsequently the Deputy Secretary of Defense reduced program funding which resulted in an FY96 LRIP of 41 missiles and a second LRIP in FY97 of 95 missiles, further exceeding the ten percent FASTA guideline. The decision stated this would preclude an excessively long funded delivery period in FY96 and permit the transition to FRP to proceed at a deliberate pace.

The current estimate for the Development quantity includes 15 Block I and 3 Block IA missiles. The current estimate for the Procurement quantity includes 1647 Block I and 800 Block IA missiles. The contract price and quantity includes \$1.4M of Navy funds for 3

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

- 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:

AAE Approved Acquisition Program Baseline dated February 08, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	2349.6	2310.4	
(2) Quantity	2465	2465	
(3) Unit Cost	0.953	0.937	1.697
b. (U) Procurement			
(1) Cost (BY91\$)	1607.3	1565.8	
(2) Quantity	2447	2447	
(3) Unit Cost	0.657	0.640	2.650

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13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	561.3	936.4	10.5	1508.2
Previous Changes:				
Economic	-	-20.7	-0.3	-21.0
Quantity	-	+476.9	-	+476.9
Schedule	-	-3.4	-	-3.4
Engineering	-	-	-	-
Estimating	+96.6	+359.9	+0.3	+456.8
Other	-	-	-	-
Support	-	+90.0	-	+90.0
Subtotal	+96.6	+902.7	-	+999.3
Current Changes:				
Economic	0.6	-12.8	-	-12.2
Quantity	-	-	-	-
Schedule	-	67.6	-	+67.6
Engineering	96.7	-	-	+96.7
Estimating	-99.3	7.1	-	-92.2
Other	-	-	-	-
Support	-	-3.3	-	-3.3
Subtotal	-2.0	+58.6	-	+56.6
Total Changes	+94.6	+961.3	-	+1055.9
Current Estimate	655.9	1897.7	10.5	2564.1

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Army TACMS/APAM, December 31, 1994

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

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDTE&E	PROC	MILCON	TOTAL
Production Estimate	650.6	846.4	9.6	1506.6
Previous Changes:				
Quantity	-	+364.0	-	+364.0
Schedule	-	+0.1	-	+0.1
Engineering	-	-	-	-
Estimating	+83.3	+286.3	+0.3	+369.9
Other	-	-	-	-
Support	-	+65.4	-	+65.4
Subtotal	+83.3	+715.8	+0.3	+799.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	40.8	-	+40.8
Engineering	83.4	-	-	+83.4
Estimating	-84.9	5.5	-	-79.4
Other	-	-	-	-
Support	-	-1.2	-	-1.2
Subtotal	-1.5	+45.1	-	+43.6
Total Changes	+81.8	+760.9	+0.3	+843.0
Current Estimate	732.4	1607.3	9.9	2349.6

b. (U) Previous Change Explanations --

RDTE&E

Economic: Revised escalation indices.
 Engineering: Increase due to adding P3I program.
 Estimating: Adjustment for current and prior inflation.

Procurement

Economic: Revised escalation indices.
 Quantity: Increase of 800 units from 1647 to 2447.
 Schedule: Allocation due to increase of 800 units from 1647 to 2447.
 Engineering: Increase due to adding P3I program.
 Estimating: Adjustment for current and prior inflation;
 Increased funding for the BAT carrier; Allocation

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

Support: due to increase of 800 units from 1647 to 2447.
Adjustment for current and prior inflation.
Increased initial spares as result of quantity
increase. Increase of fielding costs. Increase of
support equipment.

MILCON

Economic: Revised escalation indices.

Estimating: Adjustment for current and prior inflation.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDTE&E

Correct variance reported in Dec 1993
SAR to add P3I.

(Estimating)	-83.4	-96.7
(Engineering)	+83.4	+96.7

Revised escalation indices. (Economic)	N/A	+0.6
--	-----	------

Adjustment for Current & Prior Inflation. (Estimating)	-0.8	-0.8
---	------	------

Revised estimate for RDTE&E efforts to end the program in FY97 (Estimating)	-4.4	-6.1
--	------	------

Additional funds to finalize Block IA efforts (Estimating)	+3.7	+4.3
---	------	------

RDTE&E Subtotal	-1.5	-2.0
-----------------	------	------

(2) Procurement

Revised escalation indices. (Economic)	N/A	-15.5
--	-----	-------

Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.7
--	-----	------

Adjustment for Current & Prior Inflation. (Estimating)	+2.5	+2.9
---	------	------

Budget reduction required a stretchout of the annual buy quantity. (Schedule)	--	+23.0
--	----	-------

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Additional fixed costs and overhead associated with production stretchout. (Schedule)	+40.8	+44.6
Reduction of FY94 funds Appropriated but not Authorized. (Estimating)	-6.2	-7.0
Adjustment of estimate for learning curve inefficiencies caused by budget reductions. (Estimating)	+9.2	+11.2
Reduced Initial Spares requirement due to quantity decrease. (Support)	-0.7	-1.1
Decreased estimate for Other Weapon System first destination transportation support costs. (Support)	-0.5	-2.2
Procurement Subtotal	+45.1	+58.6

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

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

PAUC (Dev 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 SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.969	-0.013	-0.164	0.026	0.039	0.148	--	0.035	0.071	1.040

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Army TACMS/APAM, December 31, 1994

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

a.(U) RDTEE --
(U) P3I EMD(XA) Missiles:
LORAL Vought Systems Corp, Dallas, TX
DAAH01-94-C-0002, CPIF
Award: March 31, 1994
Definitized: March 31, 1994

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$52.4	\$0.0	0	\$52.4	\$52.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (11/27/94)	\$0.4	\$-1.1
Net Change	\$0.4	\$-1.1

Explanation of Change:

Initial report.

b.(U) Procurement --
(U) FRP IV Missiles:
LORAL Vought Sys Corp, Dallas, TX
DAAH01-92-C-0038, FFP
Award: December 23, 1993
Definitized: December 23, 1993

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$116.9	N/A	258	\$116.9	\$116.9

Explanation of Change:

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

The contract price and quantity includes \$1.4M of Navy funds for 3 missiles. Contract data as of 31 Dec 94.

(U) FRP V Missiles:
LORAL Vought Sys Corp, Dallas, TX
DAAH01-92-C-0038, FFP
Award: November 15, 1994
Definitized: November 15, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$78.3	\$0.0	148

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Army TACMS/APAM, December 31, 1994

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$78.3	\$0.0	148	\$78.3	\$78.3

Explanation of Change:

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

Note that FRP III is over 90% complete and is no longer reported in the SAR.

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

a. (U) Program Status --

- (1) Percent Program Completed: 64.0% (16 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 65.0% (\$1667.3 / \$2564.1)

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

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	623.9	27.0	5.0	-	655.9
Procurement	1032.9	107.0	98.7	659.1	1897.7
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	1667.3	134.0	103.7	659.1	2564.1

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Army TACMS/APAM, December 31, 1994

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

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rac		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1980				14.6	9.4	9.4	9.4	10.6
1981				19.9	14.0	14.0	14.0	10.6
1982				15.8	11.8	11.8	11.8	7.6
1983				7.7	6.0	6.0	6.0	4.0
1984				62.6	50.2	50.2	50.2	3.8
1985				92.3	76.4	76.4	76.4	3.4
1986				125.2	106.6	106.6	106.6	2.8
1987				87.1	76.5	76.5	76.5	2.7
1988				109.6	100.1	100.1	100.1	3.0
1989				77.7	73.8	73.8	71.2	4.2
1990				36.9	36.4	36.4	34.0	4.1
1991								4.3
1992								3.0
1993								2.7
1994				23.0	25.4	25.3	16.5	2.0
1995				32.8	37.3	29.2	1.2	2.7
1996				23.1	27.0			3.0

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

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997				4.1	5.0			3.0
Subtot	18			732.4	655.9	615.7	573.9	

Appropriation: 2032 Missile Procurement, Army

1988				3.7	3.5	3.5	3.5	3.0
1989	66	0.3	63.5	73.0	72.5	72.5	72.5	4.2
1990	104	3.1	94.4	100.6	103.1	103.1	102.8	4.1
1991	373		218.7	219.3	230.5	229.8	226.6	4.3
1992	300		159.4	159.7	172.1	172.1	168.3	3.0
1993	351		172.2	172.4	190.6	190.5	169.6	2.7
1994	255		127.4	128.2	145.6	136.3	34.8	2.0
1995	148		97.6	98.2	115.0	87.7	0.1	2.7
1996	91	0.3	85.1	89.6	107.0			3.0
1997	95	0.3	78.7	80.2	98.7			3.0
1998	100		83.2	83.8	106.2			3.0
1999	100		74.5	75.2	98.1			3.0
2000	100		75.0	75.6	101.6			3.0
2001	150		90.7	91.3	126.5			3.0

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Army TACMS/APAM, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2002	120		80.1	80.8	115.2			3.0
2003	94		67.7	68.3	100.3			3.0
2004		7.4		7.4	11.2			3.0
Subtot	2447	11.4	1568.2	1607.3	1897.7	995.5	778.2	

Appropriation: 2050 Military Construction, Army

1991				4.8	5.0	5.0	5.0	4.3
1992				5.1	5.5	5.0	2.8	3.0
Subtot				9.9	10.5	10.0	7.8	
Grand Total	2465	11.4	1568.2	2349.6	2564.1	1621.2	1359.9	

Expenditures and obligations reflect Program Office Records as of
31 Dec 94.

17. (U) Production Rate Data:

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

RDT&E

Procurement

To Date

60/50

1239/1242

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

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

	(Average Unit Flyaway Cost)		
	Development	Current	Latest Approved
	<u>Estimate</u>	<u>Estimate</u>	<u>Threshold</u>
@ Qty 2447 - @ Peak Rate: 38.0/mo			
FY 91 Base-Year \$	0.462	0.627	0.658
Then Year \$	0.539	0.738	0.775
 @ Qty 170 (1st three years) - @ Peak Rate: 38.0/mo			
FY 91 Base-Year \$	0.587	0.958	1.006
Then Year \$	0.673	0.966	1.014

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 Jan 94 Army TACMS Baseline Cost Estimate. Manning/crew support is provided by the MLRS organizational unit. Army TACMS is a certified round. Maintenance determined on the basis of periodic surveillance tests taken from Oct 93 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 -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(06A)823)

PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

V-22 Joint Services Advanced Vertical Lift Aircraft (Osprey)

2. DoD Component: Navy

Joint Participants:
USMC, USN, USSOCOM, USAF

3. Responsible Office and Telephone Number:

PROGRAM EXECUTIVE OFFICE (PMA-275) COL Robert D. Garner, USMC
AIR ASW ASSAULT AND SPECIAL MISSION Assigned: July 16, 1993
1421 JEFFERSON DAVIS HIGHWAY AV 664-4310 COM (70)
ARLINGTON, VA 22243-5120

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FOR OPEN PUBLICATION**

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603203N
PE 0603256N (Shared) Navy Proj. W1557
Project 642973
PE 0604222A
PE 0604262N (Shared) Navy MLR Proj. W2088
Project W1425, H1425
PE 1110011F (Shared) Proj. 643752

PE 1160404BB (Shared) Proj. 643752

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE
No Security Objection to Open Publication.

(AS RECOMMENDED)
95-C-0370

MAR 23 1995

Chris J. Andersen
Office of the Chief of
Naval Operations Dept. of the Navy

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V-22 (OSPREY), December 31, 1994

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

PROCUREMENT:

APPN 1506 ICN 016300 (Navy)

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 2100 nautical miles with a single 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 program in Apr 89. Congressional action funded the program in FY90, FY91, FY92, and FY93. DT IIA and B were completed. An 11 Jun 91 incident with Aircraft #5 resulted in a loss of the aircraft. 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. On 22 Oct 92, the FSD airframe contract was terminated. The V-22 FSD program closed out with 764 flight test hours in 645 flights. A letter contract was awarded to Bell-Boeing on 22 Oct 92 to begin an Engineering and Manufacturing Development Program (EMD). A letter contract was awarded to Allison on 30 Dec 92 (definitized Sep 93) for the associated EMD engines.

b. Significant Developments Since Last Report --

The airframe contract was definitized in May 94. On 18 Nov 94 aircraft #2 was removed from the flight test program. A Preliminary Design Review was completed on 28 Apr 94. A Critical Design Review

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V-22 (OSPREY), December 31, 1994

7b. Program Highlights (Cont'd):

was successfully completed on 14 Dec 94. A Defense Acquisition Board (DAB) review was held on 13 Sep 94. However, decisions on rebaselining the program have not yet been made and the Acquisition Decision Memorandum (ADM) has not yet been issued. In 1994 the program conducted a Cost and Operational Effectiveness Analysis, a cost reduction study, a software independent risk assessment, and an independent technical and schedule risk assessment. Under the Engineering and Manufacturing Development (EMD) program, the V-22 will still replace the CH-46 and CH53A/D in the Marine Corps, augment the HH-60H in the Navy, and will supplement USSOCOM aviation assets. The V-22 Osprey is expected to satisfy the mission requirement.

c. Changes Since As Of Date --

An ADM was signed on 10 Feb 95 authorizing an integrated MV-22/CV-22 program with the Navy as the lead service. Program documentation including an APBA will be submitted not later than 1 May 1995 in accordance with ADM direction.

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 --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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 89	MAR 89
Operational Testing IIA	AUG 89	N/A	N/A
Milestone IIIA (USMC P11 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

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
EMD System Requirements Review	N/A	N/A	AUG 93
EMD Trade Studies Complete	N/A	N/A	JAN 94
EMD Preliminary Design Review	N/A	N/A	APR 94
EMD Milestone II Plus	N/A	N/A	SEP 94
EMD Critical Design Review	N/A	N/A	DEC 94

Milestone 0 through USA IOC (First Operational Company Equipped) reflects the FSD program which was terminated in April 1989. A revised schedule for the EMD and production is anticipated to be approved in Spring 1995.

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 remain "not applicable" for future schedule milestones due to production termination.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
DAE Approved Acquisition Program Baseline dated December 30, 1990.

10. Performance Characteristics:

a. Performance --	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Folded				
Length (ft)	62.24	62.24 / 62.24	TBD	N/A
Width (ft)	18.42	18.42 / 18.42	TBD	N/A
Height (ft)	17.98	17.98 / 17.98	TBD	N/A

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Unfolded				
Length (ft)	57.33	57.33 / 57.33	TBD	N/A
Width (ft)	83.83	83.83 / 83.83	TBD	N/A
Height (ft)	21.73	21.73 / 21.73	TBD	N/A
Empty Weight (lbs)	31786	31786 / 31786	TBD	N/A
Readiness, Msn	70	70 / 70	TBD	N/A
Capability Rate (% MC)				
Mission Complete Probability, Rate (MFHBMA Design Controllable) (%)	98	98 / 98	TBD	N/A
Direct Maintenance Manhours per Flight Hour, Design Controllable:				
Org Level, Unscheduled (corrective)	7.0	7.0 / 7.0	TBD	N/A
Org Level, Scheduled (preventive)	2.5	2.5 / 2.5	TBD	N/A
World-wide Self-Deployment (nm) (minimum distance)	2100	2100 / 2100	TBD	N/A
Continuous Cruise Speed (kts)	250	250 / 250	TBD	N/A
Dash Speed (kts)	275	275 / 275	TBD	N/A
Instantaneous G-Loading				
Plus	4.0	4.0 / 4.0	TBD	N/A
Minus	-1.0	1.0 / 1.0	TBD	N/A
Troop Capacity	24	24 / 24	TBD	N/A
External Cargo (lbs)	10000	10000 / 10000	TBD	N/A
EMD Performance Parameters begin here:				
EMD Amphibious Troop Lift (nm/troops)	N/A	N/A / N/A		2 missions x 50/24 50/10,00 0
EMD Amphibious Ext Lift (nm/troops)	N/A	N/A / N/A		200/24
EMD Land Assault Troop Lift (nm/troops)	N/A	N/A / N/A		

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
EMD Land Assault Ext Lift (nm/lbs)	N/A	N/A / N/A		50/10,000
EMD Special Operations/Special Warfare (nm)	N/A	N/A / N/A		500
EMD Airspeed (kts)	N/A	N/A / N/A		250
EMD Mission Capable Rate (%)	N/A	N/A / N/A		83

Performance characteristics for Folded Length through External Cargo (lbs) reflects the program which was terminated in 1989. The EMD program performance characteristics reflect the current EMD contract specifications but does not include the USSOCOM requirements.

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 December 30, 1990.

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

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	2443.7	1973.3	5562.5
Procurement	20493.1	0.0	21441.7
Flyaway	(15517.1)		(16511.1)
Other Weapon Systems Cost	(3299.6)		(0.0)
Peculiar Support	(0.0)		(3069.9)
Initial Spares	(1676.4)		(1860.7)
Construction (MILCON)	136.2	0.0	24.4
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 86 Base-Year \$	23073.0	1973.3	27028.6

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

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	6589.3	93.2	25926.8
Development (RDT&E)	(181.5)	(93.2)	(1388.5)
Procurement	(6371.1)	(0.0)	(24515.2)
Construction (MILCON)	(36.7)	(0.0)	(23.1)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	29662.3	2066.5	52955.4

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	913	0	523
Total	913	0	523

Note: Excludes 6 RDTE prototypes from the SAR Baseline and 11 from the Current Estimate that are not considered fully configured.

Note: The LRIP quantities approved at Milestone II+ were 4 (FY97), 5 (FY98) and 7 (FY99).

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 December 30, 1990.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (DEC 90 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY86\$)	27028.6	1973.3	
(2) Quantity	523	0	
(3) Unit Cost	51.680	N/A	N/A

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12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY86\$)	21441.7	0.0	
(2) Quantity	523	0	
(3) Unit Cost	40.998	N/A	N/A

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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	+18.2	-1.3	+0.1	+17.0
Quantity	-77.0	-20095.5	-	-20172.5
Schedule	+0.6	-	+7.8	+8.4
Engineering	-	-	-	-
Estimating	+3833.2	-101.1	-176.0	+3556.1
Other	-	-	-	-
Support	-	-6434.9	-	-6434.9
Subtotal	+3775.0	-26632.8	-168.1	-23025.9
Current Changes:				
Economic	-15.0	-	-	-15.0
Quantity	-	35238.7	-	+35238.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	565.8	-	42.7	+608.5
Other	-	-	-	-
Support	-	10486.8	-	+10486.8
Subtotal	+550.8	+45725.5	+42.7	+46319.0
Total Changes	+4325.8	+19092.7	-125.4	+23293.1
Current Estimate	6951.0	45956.9	47.5	52955.4

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

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RD&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	+2816.3	-82.8	-132.3	+2601.2
Other	-	-	-	-
Support	-	-4976.0	-	-4976.0
Subtotal	+2743.4	-20296.4	-132.3	-17685.3
Current Changes:				
Quantity	-	16314.4	-	+16314.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	375.4	-	20.4	+395.8
Other	-	-	-	-
Support	-	4930.6	-	+4930.6
Subtotal	+375.4	+21245.0	+20.4	+21640.8
Total Changes	+3118.8	+948.6	-111.9	+3955.5
Adjustments	-	-	+0.1	+0.1
Current Estimate	5562.5	21441.7	24.4	27028.6

b. Previous Change Explanations --

RD&E

Economic: Revised escalation rates offset by impact of program funding termination and adjustment for negative program change.

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.

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

Estimating: Reprogrammings, budget adjustments, reprice of Air Force ECP offset by program funding termination. SBIR assessment. Contract price escalation clause adjustment and correction of error. Air Force transfer within program element. Congressional appropriation of FY92 funds and accounting adjustments. Termination of FSD airframe contract, PBD707, and descope of ENSIP effort on engine contract. Rephasing of EMD efforts and inclusion of MV-22 EMD efforts and USSOCOM unique RDT&E requirements.

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. Impact of termination of FSD contract. Inflation offsets.

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, and adjustments for current and prior year inflation.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)

N/A

-15.0

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Estimating)	+3.9	+5.1
Congressional appropriation for CV-22 unique requirements. (Defense Agency) (Estimating)	+11.1	+14.6
Rephrase and adjustments for CV-22 and other program requirements. (Navy) (Estimating)	+155.4	+268.2
EMD Airframe Contract Definitization cost increases in FY96-FY99. (Navy) (Estimating)	+93.1	+137.0
Included Fatigue Test Article and Static Test Article to failure in the EMD program in order to reduce technical and schedule risk. (Navy) (Estimating)	+71.6	+104.0
Conduct COEA and risk assessment/reduction efforts. (Navy) (Estimating)	+3.0	+4.0
Congressional undistributed reductions (University Research, Consulting Services, travel, and Small Business Innovation Research). (Navy) (Estimating)	-32.7	-44.2
Correction of error in previous SAR. (Navy) (Estimating)	+70.0	+77.1
RDT&E Subtotal	+375.4	+550.8
(2) <u>Procurement</u>		
Total Variance associated with increase of 523 units.	+16314.4	+35238.7
Quantity Variance resulting from change in procurement from 0 to 473 aircraft. (Navy) (Quantity)	+14199.9	+31466.4
Quantity Variance resulting from change in procurement from 0 to 50 aircraft. (Air Force) (Quantity)	+1889.6	+3465.1
Non-recurring cost associated with quantity increases. (Navy) (Quantity)	+176.6	+232.7
Non-recurring cost associated with quantity increase. (Air Force) (Quantity)	+48.3	+74.5

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Total Support Variance associated with quantity increase.	+4930.6	+10486.8
Initial Spares (Navy) (Support)	+1566.6	+3433.4
Peculiar Spt Eqmt (Navy) (Support)	+2770.6	+5976.3
Initial Spares (Air Force) (Support)	+294.1	+548.9
Peculiar Spt Eqmt (Air Force) (Support)	+299.3	+528.2
Procurement Subtotal	+21245.0	+45725.5
(3) <u>MILCON</u>		
Addition of operational sites due to quantity increase. (Navy) (Estimating)	+15.1	+32.9
Addition of operational sites due to quantity increase. (Air Force) (Estimating)	+5.3	+9.8
MILCON Subtotal	+20.4	+42.7

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

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
40.180	-4.971	-6.477	0.830	--	0.032	--	2.895	-7.691	32.489

b. Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
32.489	0.004	53.034	0.016	--	7.963	--	7.747	68.764	101.253

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

a. RDT&E --

<u>Technology Effort:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Bell-Boeing, Fort Worth, TX	\$75.5	\$0.0	0		
N00019-91-C-0172, CPFF					
Award: June 10, 1991					
Definitized: May 14, 1992					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$109.1	\$0.0	0	\$105.5	\$109.0	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.0	\$-6.8
Cumulative Variances To Date (12/31/94)	\$-5.3	\$-3.3
Net Change	\$-6.3	\$3.5

Explanation of Change:

Schedule improvements are a result of major castings being received and behind schedule tests being completed. The behind schedule situation currently is not impacting the EMD contract.

Cost variance deteriorated due to non-recovery of sunk costs associated with Lucas replacing Zurn as the coupling vendor. Zurn's coupling did not meet design requirements and the company's efforts were terminated.

EMD (Airframe):

			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Bell-Boeing, Arlington, VA	\$2650.0	\$0.0	4		
N00019-93-C-0006, CPAF					
Award: October 22, 1992					
Definitized: May 3, 1994					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$2646.9	\$0.0	4	\$2646.9	\$2646.9	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-8.5	\$-24.2
Cumulative Variances To Date (12/31/94)	\$-26.9	\$-34.9
Net Change	\$-18.4	\$-10.7

Explanation of Change:

Unfavorable schedule variance deteriorated due to late completion of tool design and fabrication. Work Breakdown Structure (WBS) elements

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15. Contract Information (Cont'd):

showing the most unfavorable schedule variance is Forward Fuselage, Aft Fuselage, and Empennage. Schedule is on track for recovery in June 1995.

Unfavorable cost variance worsened due to higher than planned costs for tool design and fabrication, unplanned changes and modifications to in-process tooling effort, and rework to correct vendor tooling changes. Again, Forward and Aft Fuselage plus the Empennage are the major WBS elements affected by the higher costs. Cost plan is on track for recovery in June 1995.

<u>EMD (Engine):</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Allison Engine Co., Indianapolis, IN				
N00019-93-C-0052, CPlF	\$140.9	\$0.0	13	
Award: December 30, 1992				
Definitized: September 28, 1993				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$142.7	\$0.0	13	\$142.7	\$142.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.2	\$-2.3
Cumulative Variances To Date (12/31/94)	\$-0.1	\$-2.7
Net Change	\$-2.3	\$-0.4

Explanation of Change:

Unfavorable schedule variance has remained relatively stable over the year. Schedule variance remains due to casting problems and new trim builds.

Cost variance worsened slightly due to increased burden labor rates as retroactive adjustments were made for 1992/1993 allowable actuals for Factory Costs, G&A, and cost of money. Full Authority Digital Engine Control (FADEC) design and refurbishment plus continued problem analysis of excessive erosion experienced during Sand and Dust Ingestion testing was also a driver in the higher costs.

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

a. Program Status --

- (1) Percent Program Completed: 35.0% (14 yrs/40 yrs)
- (2) Percent Program Cost Appropriated: 8.9% (\$4722.9 / \$52955.4)

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

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

<u>Appropriation</u>	<u>Prior Years (FY82-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2021)</u>	<u>Total</u>
RDT&E	4486.7	762.5	580.9	1120.9	6951.0
Procurement	231.4	48.0	692.8	44984.7	45956.9
MILCON	4.8	-	-	42.7	47.5
O&M	-	-	-	-	-
Total	4722.9	810.5	1273.7	46148.3	52955.4

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1982				1.5	1.3	1.3	1.2	7.6
1983				37.2	34.4	34.4	34.4	4.9
1984				88.7	85.0	85.0	84.9	3.8
1985				174.4	172.4	172.4	171.9	3.4
1986				515.2	523.9	523.9	523.7	2.8
1987				402.7	421.6	421.6	420.1	2.7
1988				422.8	457.5	405.6	401.9	3.0
1989				264.1	297.8	276.8	264.6	4.2
1990				216.2	253.7	247.6	197.3	4.0

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1991				191.4	232.8	230.6	187.9	4.3
1992				606.2	758.9	758.3	664.3	2.8
1993				557.2	714.6	714.3	230.7	2.7
1994				7.0	9.2	6.0	2.6	2.0
1995				335.2	452.7	19.4	5.1	2.7
1996				548.2	762.5			3.0
1997				405.5	580.9			3.0
1998				327.0	482.6			3.0
1999				167.5	254.6			3.0
2000				69.9	109.5			3.0
2001				47.3	76.2			3.0
2002				47.6	79.0			3.0
2003				46.2	79.0			3.0
2004				22.7	40.0			3.0
Subtot				5501.7	6880.1	3897.2	3190.6	

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy

1989		196.7		196.7	231.4	231.4	92.2	4.2
1990								4.0
1991								4.3
1992								2.8
1993								2.7
1994								2.0
1995								2.7
1996				33.5	48.0			3.0
1997	4	4.0	316.8	469.9	692.8			3.0
1998	5	4.0	329.4	453.3	688.3			3.0
1999	7	4.0	401.9	524.3	820.0			3.0
2000	8	4.0	413.3	535.7	863.0			3.0
2001	9	4.0	407.4	530.7	880.5			3.0
2002	14	51.7	554.9	894.9	1529.3			3.0
2003	14	11.6	511.4	734.8	1293.4			3.0
2004	18	12.1	611.0	879.8	1595.1			3.0
2005	20	12.2	639.9	767.1	1432.4			3.0
2006	21	12.2	640.5	780.3	1501.0			3.0

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obl1- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2007	21	12.1	616.2	812.6	1610.0			3.0
2008	21	3.0	599.7	785.1	1602.0			3.0
2009	22	3.2	620.7	754.0	1584.7			3.0
2010	21	3.0	588.1	824.0	1783.8			3.0
2011	22	3.1	605.7	773.2	1724.0			3.0
2012	22	3.1	599.3	836.8	1921.9			3.0
2013	22	3.0	593.7	944.2	2233.6			3.0
2014	24	3.3	634.8	819.7	1997.2			3.0
2015	24	3.2	627.5	755.5	1896.2			3.0
2016	23	3.1	601.2	742.7	1920.0			3.0
2017	24	3.1	619.3	769.4	2048.4			3.0
2018	24	3.1	613.3	809.9	2221.1			3.0
2019	25	3.2	632.7	823.0	2324.7			3.0
2020	28	3.6	696.8	858.5	2497.6			3.0
2021	30	3.7	724.4	800.8	2399.8			3.0
Subtot	473	373.3	14199.9	18910.4	41340.2	231.4	92.2	

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1205 Military Construction, Navy

1990				4.0	4.8	4.6	4.6	4.0
1991								4.3
1992								2.8
1993								2.7
1994								2.0
1995								2.7
1996								3.0
1997								3.0
1998								3.0
1999								3.0
2000								3.0
2001								3.0
2002								3.0
2003								3.0
2004								3.0
2005								3.0
2006								3.0
2007				5.3	10.4			3.0

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

2008								3.0
2009								3.0
2010				1.5	3.3			3.0
2011				1.6	3.5			3.0
2012				2.6	5.9			3.0
2013				2.0	4.6			3.0
2014								3.0
2015				2.1	5.2			3.0
Subtot				19.1	37.7	4.6	4.6	
Navy	473	373.3	14199.9	24431.2	48258.0	4133.2	3287.4	

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				23.1	25.0	25.0	25.0	3.0
1989				3.4	3.8	3.8	3.1	4.2
Subtot				32.1	34.5	34.5	33.8	

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 3010 Aircraft Procurement, Air Force

2000				21.6	34.8			3.0
2001	4		205.6	278.7	462.5			3.0
2002	6	24.2	266.5	366.4	626.2			3.0
2003	7	4.8	284.4	466.1	820.5			3.0
2004	7	4.9	263.6	334.3	606.1			3.0
2005	7	4.8	248.1	291.7	544.7			3.0
2006	7	4.8	236.1	326.4	627.8			3.0
2007	7	4.8	227.2	271.7	538.2			3.0
2008	5		158.1	174.4	355.9			3.0
Subtot	50	48.3	1889.6	2531.3	4616.7			

Appropriation: 3300 Military Construction, Air Force

2001				1.4	2.3			3.0
2002								3.0
2003								3.0
2004				1.4	2.5			3.0
2005								3.0
2006				0.9	1.8			3.0

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obl1- gated	Ex- pended	

Appropriation: 3300 Military Construction, Air Force (Cont'd)

2007								3.0
2008				1.6	3.2			3.0
Subtot				5.3	9.8			
USAF	50	48.3	1889.6	2568.7	4661.0	34.5	33.8	

Appropriation: 0400 RDT&E, Defense Agencies

1991				6.3	7.7	7.7	6.5	4.3
1992				11.3	14.1	14.1	3.8	2.8
1993								
1994				11.1	14.6	5.1	1.0	2.0
Subtot				28.7	36.4	26.9	11.3	
DoD				28.7	36.4	26.9	11.3	
Grand Total	523	421.6	16089.5	27028.6	52955.4	4194.6	3332.5	

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V-22 (OSPREY), December 31, 1994

17. Production Rate Data:

a. Deliveries (Plan/Actual) --		<u>To Date</u>
	RD&E	6/6
	Procurement	0/0

Of the 6 aircraft ordered and delivered under the FSD airframe contract, only 2 aircraft remain. Of those 2 aircraft, 1 is in permanent storage and 1 is still being flown as part of the test program at Patuxent River, MD.

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

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

An Operating and Support Cost estimate for the V-22 is currently being developed and will be reported in a future SAR.

b. Costs -- None.

c. Contractor Support Costs -- None.

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DoD-1 CHEM DEMIL

94-032-

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: Chem Demil

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

Chemical Demilitarization Program

2. DoD Component: Army

3. Responsible Office and Telephone Number:

AMSCB-DG

COL James M. Coverstone

APG, MD 21010-5401

Assigned: November 21, 1994

AV 584-3447 COMM 410-671-3447

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0708007D

PROCUREMENT:

APPN ICN TBD

MILCON:

PE 0708007A, 0708007D

O & M:

PE 0708007D

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AND SECURITY REVIEW (DAIS-PA)
DEPARTMENT OF DEFENSE

5. Related Programs:

None.

6. Mission and Description:

The Chemical Demilitarization (Chem Demil) Program consists of the Chemical Stockpile Disposal Program (CSDP) and the Non-Stockpile

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95-0895

Chem Demil, December 31, 1994

6. Mission and Description (Cont'd):

Chemical Materiel Program (NSCMP). The primary mission to be accomplished under the CSDP is the demilitarization of the United States lethal chemical agents and munitions stored at eight locations in the continental United States, and Johnston Atoll (JA) in the Pacific. The current or baseline program plan uses a reverse-assembly process to separate the components of the chemical weapons followed by incineration of each component. Efforts to be accomplished under the NSCMP are the destruction and disposal of former production facilities; binary chemical weapons; recovered chemical weapons and miscellaneous chemical warfare materiel. The Chemical Stockpile Emergency Preparedness Program (CSEPP) is an effort complementary to the CSDP to enhance protection of the civilian population during storage, transport, and destruction of the United States' chemical weapons stockpile. The Army has lead in the CSEPP to provide emergency response/ preparedness to the communities surrounding the eight continental United States disposal sites. The Federal Emergency Management Agency participates in this program by providing technical emergency preparedness assistance as well as a financial structure for transferring funds to the states and counties.

7. Program Highlights:

a. Significant Historical Developments --

The concept plan for the CSDP was submitted to Congress in 1986. In 1988, the Final Programmatic Environmental Impact Statement for the program was completed. Also, the Record of Decision (ROD) and the CSDP Implementation Plan were finalized and submitted to Congress. The Army selected on-site disposal, using reverse assembly/incineration (baseline process) to destroy the chemical agents and munitions. The National Research Council (NRC) under the auspices of the National Academy of Sciences (NAS) was selected as an independent group to provide program oversight to the demil program. In 1988, construction activities at the Johnston Atoll Chemical Agent Disposal System (JACADS) were completed and systemization started. In 1989, construction of the first continental United States disposal facility at Tooele Army Depot, Utah, was initiated, and destruction of the entire stockpile of BX (nerve agent) at Pine Bluff Arsenal (PBA), Arkansas, was completed.

In 1990, the successful retrograde of all chemical munitions stored in Germany to the storage facilities at JA was accomplished. Congress directed that the Army conduct and successfully complete Operational Verification Testing (OVT) at JACADS prior to initiating the testing at the follow-on sites in the United States. A four-phase OVT campaign was conducted. The first campaign (destruction of the GB-filled [nerve agent] M55 rockets) began in July 1990 and was completed in February 1991. The baseline

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Chem Demil, December 31, 1994

7a. Program Highlights (Cont'd):

technology proved its capability to safely and effectively destroy agent, however, JACADS experienced significant mechanical problems which affected the destruction throughput rates of the rockets. Engineering changes were made to the system which greatly improved throughput rates during the second OVT campaign, destruction of VX-filled (nerve agent) M55 rockets, that occurred November 15, 1991 through March 31, 1992. The third campaign, destruction of HD-filled (mustard agent) one-ton containers, was successfully conducted from August 3, 1992 to September 4, 1992. The final phase, destruction of HD-filled (mustard agent) M60 projectiles, was conducted from September 23, 1992 to March 6, 1993. In August 1993, the Secretary of Defense certified to Congress that the Army had successfully completed OVT of JACADS, and systemization at the recently completed Tooele facility commenced in September 1993.

In 1991, support was provided to assist with chemical weapon treaties, host Russian informational visits, and support United Nations projects. In August 1991, the Army commissioned the NRC of the NAS to investigate use of alternative technologies to the incineration process for use in destroying the United States chemical agents and munitions. Subsequently, the Congress directed in the National Defense Authorization Act for Fiscal Year 1993 that the Army use alternative technologies to incineration for destroying the chemical weapons stored at the low-volume sites (Aberdeen Proving Ground, Maryland; Blue Grass Army Depot, Kentucky; and Newport Army Ammunition Plant, Indiana) if the alternative technology is significantly safer, equally or more cost effective, and the chemical weapons stockpile can be destroyed by December 31, 2004.

In April 1992, the Request for Proposal for the second disposal facility, to be constructed at the Anniston Army Depot, Alabama, was released. In October 1992, the U.S. Army Chemical Materiel Destruction Agency (USACMDA) was established to consolidate operational responsibility for the overall destruction activities of chemical warfare capabilities into one office.

The report on the physical and chemical integrity of the chemical stockpile was developed and provided to Congress in August 1993. In October 1993, an Army Systems Acquisition Review Council Decision Review was conducted to select the Army's preferred demilitarization process (either reverse assembly/incineration or cryofracture/incineration technology) to be used for disposal of chemical weapons at Pueblo Depot Activity, Colorado. The Army selected the reverse assembly/incineration (baseline) process and notified Congress of its decision on March 4, 1994. In November 1993, an Interim Survey and Analysis Report, which projected the scope and a rough-order-of-magnitude cost estimate for the

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Chem Demil, December 31, 1994

7a. Program Highlights (Cont'd):

non-stockpile chemical materiel destruction effort, was published and provided to Congress.

Full-scale disposal operations, destruction of GB-filled M55 rockets at JACADS, commenced in January 1994.

The NRC Committee on Review and Evaluation of the Army Chemical Stockpile Disposal Program "the Stockpile Committee" provided its report "Recommendations for the Disposal of Chemical Agents and Munitions" to the Army on February 4, 1994. The NRC's report contained a series of recommendations not only to alternative agent destruction technologies but which encompassed many issues surrounding the demil program. The Army evaluated the recommendations in the NRC Report; considered comments provided by concerned citizens residing near each of the stockpile sites; and provided its report to Congress on April 12, 1994. Based upon the Army's evaluation of the NRC report, an aggressive research and development program on two low-temperature/low pressure alternative technologies (neutralization as stand-alone and neutralization followed by biodegradation) was initiated in August 1994. These technologies are being explored for potential use at low-volume bulk only sites, Aberdeen Proving Ground, MD, and Newport Army Ammunition Plant, Indiana. Carbon filters are being added to the pollution abatement system used with the baseline process. Also, site-specific risk analyses are being updated to include the latest methodologies and information; and the stockpile surveillance program efforts have been increased. The Army is implementing an aggressive campaign to establish and staff an expanded CSDP public outreach program. In 1994, the public outreach efforts focused on increasing public awareness and community involvement in decisions regarding the technology selection process, operations oversight, plans for decommissioning facilities, and environment issues.

On March 10, 1994, senior representatives from the Office of the Secretary of Defense conducted a special review of the Chem Demil Program. In September of 1994, a study to determine costs for dismantling of the demilitarization facilities (Phase II Closure) was completed. These costs will be verified and included in the ongoing Independent Cost Estimate, scheduled to be completed in late FY 1995.

On October 1, 1994, USACMDA was redesignated the U.S. Army Chemical Demilitarization and Remediation Activity (USACDRA), after its merger with the U.S. Army Chemical and Biological Defense Command. Also, on October 1, 1994, the overall CSEPP was restructured which centralized all CSEPP efforts to streamline procedures, improve responsiveness to state and local jurisdictions, and improve the overall budgeting process.

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Chem Demil, December 31, 1994

7a. Program Highlights (Cont'd):

Trial burns on the dunnage incinerator at JACADS were completed on December 8, 1994 and tests on the brine reduction area were completed on December 11, 1994. On behalf of the Secretary of the Army, the Assistant Secretary of the Army for Research, Development and Acquisition became the DoD Executive Agent for the Chem Demil Program on December 26, 1994, at which time the program was designated an Acquisition Category 1D Program (ACAT 1D). Prior to this time, the DoD Executive for the program was the Assistant Secretary of the Army for Installations, Logistics and Environment. The Program Manager, Chem Demil is responsible for executing the Chem Demil Program, while providing maximum protection to the public, personnel involved in the destruction effort, and the environment.

The Chem Demil Program is expected to satisfy mission requirements.

b. Significant Developments Since Last Report --
None - Initial SAR.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

No approved Acquisition Program Baseline (APB) currently exists for this program. A draft APB is being coordinated and will appear in future reports.

9. Schedule:

CSDP

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE DISPOSAL PROGRAM			
(CSDP)			
CAMDS Testing	SEP 79	N/A	SEP 79
DAB Program Review	MAR 95	N/A	MAR 95
JOHNSTON ATOLL (JACADS)			
JACADS Construction	SEP 85	N/A	SEP 85
Begin Operations	JUL 90	N/A	JUL 90
Begin Closure	MAR 00	N/A	MAR 00
TOOELE (TOCDF)			
Submit RCRA/CAA Permit Applications	OCT 88	N/A	OCT 88
Systems Contract Award/Start Const.	OCT 89	N/A	OCT 89
Begin Systemization	SEP 93	N/A	SEP 93
Begin Operations	SEP 95	N/A	SEP 95

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Chem Demil, December 31, 1994

9a. Schedule (Cont'd):
CSDP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Begin Closure	JAN 02	N/A	JAN 02
ANNISTON (ANCDF)			
Submit Updated RCRA/CAA Permit Applications	FEB 95	N/A	FEB 95
Systems Contract Award/Start Const.	AUG 95	N/A	AUG 95
Begin Systemization	JUN 98	N/A	JUN 98
Begin Operations	DEC 99	N/A	DEC 99
Begin Closure	AUG 03	N/A	AUG 03
UMATILLA (UNCDF)			
Submit Updated RCRA/CAA Permit Applications	MAR 95	N/A	MAR 95
Systems Contract Award/Start Const.	MAR 96	N/A	MAR 96
Begin Systemization	JAN 99	N/A	JAN 99
Begin Operations	JUL 00	N/A	JUL 00
Begin Closure	SEP 03	N/A	SEP 03
PINE BLUFF (PBCDF)			
Submit RCRA/CAA Permit Applications	JUN 95	N/A	JUN 95
Systems Contract Award/Start Const.	JUN 96	N/A	JUN 96
Begin Systemization	FEB 99	N/A	FEB 99
Begin Operations	AUG 00	N/A	AUG 00
Begin Closure	NOV 03	N/A	NOV 03
PUEBLO (PUCDF)			
Submit Updated RCRA/CAA Permit Applications	SEP 95	N/A	SEP 95
Systems Contract Award/Start Const.	APR 97	N/A	APR 97
Begin Systemization	FEB 00	N/A	FEB 00
Begin Operations	AUG 01	N/A	AUG 01
Begin Closure	AUG 03	N/A	AUG 03
LEXINGTON BLUE GRASS (BQCDF)			
Submit RCRA/CAA Permit Applications	SEP 95	N/A	SEP 95
Systems Contract Award/Start Const.	JAN 98	N/A	JAN 98
Begin Systemization	NOV 00	N/A	NOV 00
Begin Operations	MAY 02	N/A	MAY 02
Begin Closure	MAR 04	N/A	MAR 04
ABERDEEN (ABCDF)			
Submit RCRA/CAA Permit Applications	JUL 96	N/A	JUL 96
Systems Contract Award/Start Const.	JAN 99	N/A	JAN 99
Begin Systemization	JUN 01	N/A	JUN 01
Begin Operations	JUN 02	N/A	JUN 02
Begin Closure	MAY 03	N/A	MAY 03

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Chem Demil, December 31, 1994

9a. Schedule (Cont'd):
CSDP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
NEWPORT (NECDF)			
Submit RCRA/CAA Permit Applications	JUL 97	N/A	JUL 97
Systems Contract Award/Start Const.	JAN 00	N/A	JAN 00
Begin Systemization	JUN 02	N/A	JUN 02
Begin Operations	JUN 03	N/A	JUN 03
Begin Closure	APR 04	N/A	APR 04

Note 1: Acronyms - in order of appearance:

RCRA - Resource Conservation and Recovery Act
CAA - Clean Air Act
CAMDS - Chemical Agent Munition Disposal System
JACADS - Johnston Atoll Chemical Agent Disposal System
T&E - Test and Evaluation
TOCDF - Tooele Chemical Agent Disposal Facility
ANCDF - Anniston Chemical Agent Disposal Facility
UMCDF - Umatilla Chemical Agent Disposal Facility
PBCDF - Pine Bluff Chemical Agent Disposal Facility
PUCDF - Pueblo Chemical Agent Disposal Facility
BGCDF - Blue Grass Chemical Agent Disposal Facility
ABCDF - Aberdeen Chemical Agent Disposal Facility
NECDF - Newport Chemical Agent Disposal Facility

Note 2: Principal Pre-Operational Readiness Process Activities include:

CSEPP
Safety/Surety/Occupational Health
Training
Systemization Oversight Review
Acceptance T&E Report Review
Review of Final Environmental Approvals
Plant Operations Preparation

Note 3: "Closure" occurs in two phases. Phase 1 is the chemical decontamination of the facility in accordance with procedures detailed in the RCRA permit applications closure plan which is incorporated as a permit requirement. Phase 2 is facility demolition and debris removal and subsequent site restoration. The scope of Phase 2 is currently being defined.

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Chem Demil, December 31, 1994

9b. Schedule (Cont'd):
CSDP

- b. Previous Change Explanations -- None - Initial SAR.
- c. Current Change Explanations -- None.
- d. References --

Development Estimate:
FY96 President's Budget dated February 6, 1995.

Approved Program: None.

Alternative Technology

a. Milestones --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
ALTERNATIVE TECHNOLOGIES PROGRAM			
MILESTONE 0	AUG 94	N/A	AUG 94
MILESTONE I/II (Pilot Scale)	JUL 96	N/A	JUL 96

Note 1: The alternative technology program is defining neutralization processes. A technology decision will occur at the MS I/II decision (July 1996) for which the parameters will be established.

- b. Previous Change Explanations -- None - Initial SAR.
- c. Current Change Explanations -- None.
- d. References --

Planning Estimate:
FY96 President's Budget dated February 6, 1995.

Approved Program: None.

CSEPP

a. Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM (CSEPP)			

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Chem Demil, December 31, 1994

9a. Schedule (Cont'd):
CSEPP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
TOOELE (TOCDF)			
ADP	JAN 94	N/A	JAN 94
Communications	MAR 94	N/A	MAR 94
A&N	JUN 94	N/A	JUN 94
Pre-Op/Annual Exercise	AUG 95	N/A	AUG 95
ANNISTON (ANCDF)			
A&N	SEP 93	N/A	SEP 93
ADP	JUN 94	N/A	JUN 94
Communications	OCT 94	N/A	OCT 94
Pre-Op/Annual Exercise	MAR 99	N/A	MAR 99
UMATILLA (UMCDF)			
ADP	JUN 94	N/A	JUN 94
Communications	MAY 95	N/A	MAY 95
A&N	DEC 95	N/A	DEC 95
Pre-Op/Annual Exercise	MAY 00	N/A	MAY 00
PINE BLUFF (PBCDF)			
ADP	FEB 92	N/A	FEB 92
A&N	MAY 94	N/A	MAY 94
Communications	MAY 94	N/A	MAY 94
Pre-Op/Annual Exercise	FEB 00	N/A	FEB 00
PUEBLO (PUCDF)			
ADP	OCT 92	N/A	OCT 92
Communications	JUN 94	N/A	JUN 94
A&N	DEC 95	N/A	DEC 95
Pre-Op/Annual Exercise	AUG 00	N/A	AUG 00
LEXINGTON BLUE GRASS (BGCDF)			
ADP	JUL 93	N/A	JUL 93
A&N	OCT 94	N/A	OCT 94
Communications	OCT 94	N/A	OCT 94
Pre-Op/Annual Exercise	OCT 01	N/A	OCT 01
ABERDEEN (ABCDF)			
Communications	APR 95	N/A	APR 95
ADP	APR 95	N/A	APR 95
A&N	MAY 95	N/A	MAY 95
Pre-Op/Annual Exercise	APR 02	N/A	APR 02
NEWPORT (NECDF)			
ADP	AUG 92	N/A	AUG 92
Communications	MAY 94	N/A	MAY 94
A&N	SEP 94	N/A	SEP 94
Pre-Op/Annual Exercise	JUN 02	N/A	JUN 02

Note 1: Acronyms in order of schedule appearance:

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Chem Demil, December 31, 1994

9a. Schedule (Cont'd):

CSEPP

A&N - Alert and Notification
ADP - Automatic Data Processing
TOCDF - Tooele Chemical Agent Disposal Facility
ANCDF - Anniston Chemical Agent Disposal Facility
UNCDF - Umatilla Chemical Agent Disposal Facility
PBCDF - Pine Bluff Chemical Agent Disposal Facility
PUCDF - Pueblo Chemical Agent Disposal Facility
BGCDF - Blue Grass Chemical Agent Disposal Facility
ABCDF - Aberdeen Chemical Agent Disposal Facility
NECDF - Newport Chemical Agent Disposal Facility

Note 2: Each site will be exercised on an annual basis in the month agreed upon by the Army and State. Plans and training were completed at each site by December 1992.

Note 3: The Pre-Operational Annual Exercise ("Pre-Op/Annual Exercise") is defined as the last annual exercise prior to initiating Chemical Demilitarization operations. Medical preparedness will occur and be evaluated prior to the pre-operational annual exercise.

b. Previous Change Explanations -- None - Initial SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

NSCMP

a. Milestones --

Development Estimate	Approved Program	Current Estimate
-------------------------	---------------------	---------------------

NON-STOCKPILE CHEMICAL MATERIEL PROGRAM
(NSCMP)

Begin the Programmatic Environmental Impact Statement (PEIS)	OCT 94	N/A	OCT 94
Obtain the PEIS Record of Decision	NOV 97	N/A	NOV 97
WASTE CHARACTERIZATION			
Waste Characterization Complete	AUG 95	N/A	AUG 95
HQDA Safety Approval of Waste Characterization for Agents	AUG 95	N/A	AUG 95

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Chem Demil, December 31, 1994

9a. Schedule (Cont'd):
NSCMP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
MUNITIONS MANAGEMENT DEVICE PROTOTYPE			
(w/o Energetics)			
Submit Permit Application	SEP 95	N/A	SEP 95
Obtain Environmental Permit	MAY 96	N/A	MAY 96
Complete Concept Demonstration	JUN 97	N/A	JUN 97
MUNITIONS MANAGEMENT DEVICE PROTOTYPE			
(w/ Energetics)			
Submit Permit Application	APR 97	N/A	APR 97
Obtain Environmental Permit	FEB 98	N/A	FEB 98
Complete Concept Demonstration	AUG 98	N/A	AUG 98
RAPID RESPONSE SYSTEM PROTOTYPE			
Submit Permit Application	AUG 95	N/A	AUG 95
Obtain Environmental Permit	JAN 96	N/A	JAN 96
Complete Concept Demonstration	APR 96	N/A	APR 96

Note 1: Performance - The Non-Stockpile Chemical Materiel Program (NSCMP) demonstration of chemical destruction concepts (Munitions Management Devices and Rapid Response System) will identify specific technical performance parameters for each.

Note 2: Schedule - Parameters will be defined once the Chemical Weapons Convention (CWC) has been ratified by the U.S. and enters into force (EIF). The chemical destruction systems are required to comply with the CWC after EIF and to address risk to public health and the environment due to chemical warfare materiel recovered at formerly used defense sites and active installations.

Note 3: Cost - Parameters are estimates that include prior year plus the FY96-05 planning cycle. Costs include CWC mandates but not chemical materiel buried before January 1, 1977. Such buried materiel is not required to be destroyed under the CWC until recovered. The recovery and destruction of such buried items may be accomplished under the Defense Environmental Restoration Program. These costs will be defined as the ORD/BCE/ICE are developed, then updated in the APB.

b. Previous Change Explanations -- None - Initial SAR.

c. Current Change Explanations -- None.

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Chem Demil, December 31, 1994

9d. Schedule (Cont'd):
NSCMP

d. References --

Development Estimate:
FY96 President's Budget dated February 6, 1995.

Approved Program: None.

10. Performance Characteristics:
CSDP

a. Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
CHEMICAL STOCKPILE DISPOSAL PROGRAM (CSDP)				
Environmental Performance	Exceed State & Federal Rqmts.	N/A / N/A	TBD	Meet State & Federal Rqmts.
Safety and Occupational Laws and Regulations	Exceed State & Federal Stds.	N/A / N/A	TBD	Meet State & Federal Stds.
Chemical Agent Release	0	N/A / N/A	TBD	0
Chemical Agent Exposure	0	N/A / N/A	TBD	0
LIC POHC Removal Efficiency	100%	N/A / N/A	TBD	99.9999%
Other Furnaces POHC of Agent Removal efficiency	100%	N/A / N/A	TBD	99.99%
DPS PCB Removal Efficiency	100%	N/A / N/A	TBD	99.9999%
PROCESSING RATES (Per/Hour)				
M55 Rockets	24	N/A / N/A	TBD	24
M23 Land Mines	36	N/A / N/A	TBD	36
105mm Projectiles				
Mustard	104	N/A / N/A	TBD	104
GB	117	N/A / N/A	TBD	117
155mm Projectiles				
Mustard	98	N/A / N/A	TBD	98
VX & GB	83	N/A / N/A	TBD	83

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Chem Demil, December 31, 1994

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

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
8-inch Projectile	32	N/A	/ N/A	TBD	32
4.2inch Mortar	114	N/A	/ N/A	TBD	114
500lb Bomb	4.6	N/A	/ N/A	TBD	4.6
750lb Bomb	4.6	N/A	/ N/A	TBD	4.6
Weteye Bomb	1.7	N/A	/ N/A	TBD	1.7
Ton Container					
Mustard & GB	0.8	N/A	/ N/A	TBD	0.8
VX	0.5	N/A	/ N/A	TBD	0.5
Spray Tanks	0.6	N/A	/ N/A	TBD	0.6

Note 1: Acroynms - in order of appearance:

DPS - Deactivation Furnace System
GB - Nerve Chemical Agent
H/HD - Mustard Blister Chemical Agent
LIC - Liquid Incinerator
mm - millimeter
PCB - Polychlorinated Biphenyl
POHC - Principal Organic Hazardous Constituent
VX - Nerve Chemical Agent
lb - Pound
mg/m³ - milligram per cubic meter

Note 2: "Meets environmental laws and regulations" means the facility is operating in compliance with all the conditions specified in environmental permits and applicable laws and regulations. The threshold is breached if violation warrants a stop work order.

Note 3: The term chemical agent release is defined as an event involving:

- Confirmed agent release outside engineering controls and above the general population limits as measured at a perimeter monitoring station with the disposal facility as the identified source. The general population limits are:

GB - 0.000003 mg/m³
VX - 0.000003 mg/m³
H/HD - 0.0001 mg/m³

- Confirmed point source (stack) agent release above the allowable stack concentration (ASC). The ASC values are:

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Chem Demil, December 31, 1994

10a. Performance Characteristics (Cont'd):

CSDP

GB - 0.0003 mg/m³

VX - 0.0003 mg/m³

H/HD - 0.03 mg/m³

Note 4: A chemical agent exposure refers to an individual exhibiting clinical signs or symptoms of being exposed to chemical agent.

Note 5: Incinerator performance is defined as the demonstration of POHC and PCB destruction and removal efficiency during trial burns. Incinerator operational conditions are recorded during all incineration activities. Measurements of other incinerator emissions are generally required by permits, but these measurements are typically not limited to just during trial burns and when the incinerator is operating at maximum capacity. For example, emissions monitoring of agent is a continuous requirement regardless of throughput rate.

Note 6: Threshold values represent start-up rate demonstrated during systemization eight-hour capacity run. Objective values represent the average full-rates utilized in the calculation of schedule duration.

Note 7: "Meets safety and occupational health laws and regulations" means the facility is operating in compliance with the conditions specified in safety and occupational health laws and regulations. The threshold is breached if violation warrants a stop work order.

b. Previous Change Explanations -- None - Initial SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

Alternative Technology

a. Performance --	PE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
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ALTERNATIVE
TECHNOLOGIES PROGRAM

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Chem Demil, December 31, 1994

10a. Performance Characteristics (Cont'd):

Alternative Technology

Note 1: The alternative technology program is defining neutralization processes. A technology decision will occur at the MS I/II decision (July 1996) for which the parameters will be established.

b. Previous Change Explanations -- None - Initial SAR.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

CSEPP

a. Performance --		Approved Program		Demon- strated	Current
	<u>DE</u>	<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>
CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM (CSEPP)					
Notification of Decisions					
COMMUNICATIONS					
Lines	1.5 mbs T1, for onpost, IRZ and state connect	N/A	/ N/A	TBD	1.5 mbs T1, for onpost, IRZ and state connect
Hardware	Mux equip. compat. w/T1 1.5 mbs lines	N/A	/ N/A	TBD	Mux equip. compat. w/T1 1.5 mbs lines
ADP					

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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Hardware	Capacity for plan, hazard asmt, A&N, and total chem emerg mgmt	N/A / N/A	TBD	Capacity for plan, hazard asmt, A&N, and total chem emerg mgmt
Software	Identic. onpost/offpost software at national level	N/A / N/A	TBD	Identic. onpost/offpost software at national level
Sirens	Total IRZ cov at 10 dbC over avg ambient levels	N/A / N/A	TBD	Total IRZ cov at 10 dbC over avg ambient levels
Tone Alert Radios	One per occupied residence within IRZ	N/A / N/A	TBD	One per occupied residence within IRZ
ANNUAL EXERCISE				
Notify Offpost	5/10	N/A / N/A	TBD	5/10
Notify Public	8	N/A / N/A	TBD	8

Note 1: Acronyms -

ADP - Automatic Data Processing
A&N - Alert & Notification
IRZ - Immediate Response Zone
mbs - megabytes per second
kbs - kilobytes per second
Mux - Multiplex
dbC - Decibel C - weighted network

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10a. Performance Characteristics (Cont'd):

CSEPP

cov - coverage

Note 2: The CSEPP applies to the four aspects of storage, transport, demil, and non-stockpile efforts pertaining to chemical munitions and facilities.

Note 3: The core team is recasting program guidance into firm requirements, assessing CSEPP status at the eight sites, and will baseline the program IAW the recast requirements. Estimate for submittal to HQDA is 1QFY96.

Note 4: The time (minutes) it takes onpost personnel to notify the offpost officials of an incident onpost (10 minutes time at PUDA, UMDA, and TEAD are based on distance to the population density).

Note 5: The time (minutes) it takes offpost officials to alert and notify the public of an incident onpost.

b. Previous Change Explanations -- None - Initial SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

NSCMP

a. Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
NON-STOCKPILE CHEMICAL MATERIEL PROGRAM (NSCMP)				
Comply CWC provisions	Yes	N/A / N/A	TBD	Yes
Characterize Waste Munition Management Device Prototype (w/o energetics)				
Munition Management Device Prototype (with Energetics)				

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10a. Performance Characteristics (Cont'd):

NSCMP

	Approved Program	Demon- strated	Current
<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>

**Rapid Response
System Prototype**

Note 1: Performance - The Non-Stockpile Chemical Materiel Program (NSCMP) demonstration of chemical destruction concepts (Munitions Management Devices and Rapid Response System) will identify specific technical performance parameters for each.

Note 2: Schedule - Parameters will be defined once the Chemical Weapons Convention (CWC) has been ratified by the U.S. and enters into force (EIF). The chemical destruction systems are required to comply with the CWC after EIF and to address risk to public health and the environment due to chemical warfare materiel recovered at formerly used defense sites and active installations.

Note 3: Cost - Parameters are estimates that include prior year plus the FY96-05 planning cycle. Costs include CWC mandates but not chemical materiel buried before January 1, 1977. Such buried materiel is not required to be destroyed under the CWC until recovered. The recovery and destruction of such buried items may be accomplished under the Defense Environmental Restoration Program. These costs will be defined as the ORD/BCE/ICE are developed, then updated in the APB.

b. Previous Change Explanations -- None - Initial SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	390.8	0.0	390.8
Procurement	2619.0	0.0	2619.0
Total Rollaway	(2619.0)		(2619.0)
Total Other Wpn Sys	(0.0)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	1240.1	0.0	1240.1
Ops. and Maint. (O&M)	<u>7224.6</u>	<u>0.0</u>	<u>7224.6</u>
Total FY 94 Base-Year \$	11474.5	0.0	11474.5
Escalation	1636.1	0.0	1636.1
Development (RDT&E)	(48.2)	(0.0)	(48.2)
Procurement	(222.3)	(0.0)	(222.3)
Construction (MILCON)	(133.5)	(0.0)	(133.5)
Ops. and Maint. (O&M)	<u>(1232.1)</u>	<u>(0.0)</u>	<u>(1232.1)</u>
Total Then-Year \$	13110.6	0.0	13110.6
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	18	N/A	18
Total	18	N/A	18

CSDP

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	67.0	0.0	67.0
Procurement	2280.0	0.0	2280.0
Chem Demil	(2280.0)		(2280.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	1240.1	0.0	1240.1
Ops. and Maint. (O&M)	<u>5823.6</u>	<u>0.0</u>	<u>5823.6</u>
Total FY 94 Base-Year \$	9410.7	0.0	9410.7
Escalation	1293.8	0.0	1293.8
Development (RDT&E)	(-6.4)	(0.0)	(-6.4)
Procurement	(196.8)	(0.0)	(196.8)
Construction (MILCON)	(133.5)	(0.0)	(133.5)
Ops. and Maint. (O&M)	<u>(969.9)</u>	<u>(0.0)</u>	<u>(969.9)</u>
Total Then-Year \$	10704.5	0.0	10704.5

German retrograde and Johnston Atoll leave are included in O&M funding.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	9	N/A	9
Total	9	N/A	9

Note: Total quantity is defined as 9 (8 CONUS plants and Johnston Atoll).

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

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

Alternative Technology

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	189.0	0.0	189.0
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	0.0	0.0
Total FY 94 Base-Year \$	189.0	0.0	189.0
Escalation	34.8	0.0	34.8
Development (RDT&E)	(34.8)	(0.0)	(34.8)
Procurement	(0.0)	(0.0)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	223.8	0.0	223.8
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	0	N/A	0
Total	0	N/A	0

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

Alternative Technology

- c. Foreign Military Sales/International Cooperative Programs -- None.
- d. Nuclear Costs -- None.
- e. References --

Planning Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

CSEPP

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	254.9	0.0	254.9
CSEPP	(254.9)		(254.9)
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)	<u>628.2</u>	<u>0.0</u>	<u>628.2</u>
Total FY 94 Base-Year \$	883.1	0.0	883.1
Escalation	91.6	0.0	91.6
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(14.4)	(0.0)	(14.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(77.2)</u>	<u>(0.0)</u>	<u>(77.2)</u>
Total Then-Year \$	974.7	0.0	974.7
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>8</u>	<u>N/A</u>	<u>8</u>
Total	8	N/A	8

Note: Total quantity is defined as 8 CONUS CSEPP sites.

- c. Foreign Military Sales/International Cooperative Programs -- None.
- d. Nuclear Costs -- None.

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

e. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program: None.

NSCMP

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	134.8	0.0	134.8
Procurement	84.1	0.0	84.1
NSCMP	(84.1)		(84.1)
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)	<u>772.8</u>	<u>0.0</u>	<u>772.8</u>
Total FY 94 Base-Year \$	991.7	0.0	991.7
Escalation	215.9	0.0	215.9
Development (RDT&E)	(19.8)	(0.0)	(19.8)
Procurement	(11.1)	(0.0)	(11.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(185.0)</u>	<u>(0.0)</u>	<u>(185.0)</u>
Total Then-Year \$	1207.6	0.0	1207.6
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>1</u>	<u>N/A</u>	<u>1</u>
Total	1	N/A	1

A nominal quantity of "1" has been identified for NSCMP for unit cost reporting purposes.

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

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

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

Approved Program: None.

12. Unit Cost Summary:

CSDP

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (??? ?? N/A)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY94\$)	9410.7	0.0	
(2) Quantity	9	N/A	
(3) Unit Cost	1045.63	N/A	N/A
b. Procurement			
(1) Cost (BY94\$)	2280.0	0.0	
(2) Quantity	9	N/A	
(3) Unit Cost	253.33	N/A	N/A

There is no Nunn-McCurdy UCR Baseline. An APB has not been approved for this program.

Alternative Technology

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (??? ?? N/A)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY94\$)	189.0	0.0	
(2) Quantity	N/A	N/A	
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

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12. Unit Cost Summary (Cont'd):

Alternative Technology

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY94\$)	0.0	0.0	
(2) Quantity	N/A	N/A	
(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.

CSEPP

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (??? ?? N/A)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	883.1	0.0	
(2) Quantity	8	N/A	
(3) Unit Cost	110.39	N/A	N/A
b. Procurement			
(1) Cost (BY94\$)	254.9	0.0	
(2) Quantity	8	N/A	
(3) Unit Cost	31.86	N/A	N/A

There is no Nunn-McCurdy UCR Baseline. An APB has not been approved for this program.

NSCMP

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (??? ?? N/A)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	991.7	0.0	
(2) Quantity	1	N/A	
(3) Unit Cost	991.70	N/A	N/A

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12. Unit Cost Summary (Cont'd):

NSCMP

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY94\$)	84.1	0.0	
(2) Quantity	1	N/A	
(3) Unit Cost	84.10	N/A	N/A

There is no Nunn McCurdy UCR Baseline. An APB has not been approved for this program.

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13. Cost Variance Analysis:
CSDP

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

	RD&E	PROC	MILCON	O&M	TOTAL
Development Estimate	60.6	2476.8	1373.6	6793.5	10704.5
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Total Changes	-	-	-	-	-
Current Estimate	60.6	2476.8	1373.6	6793.5	10704.5

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Chem Demil, December 31, 1994

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

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	O&M	TOTAL
Development Estimate	67.0	2280.0	1240.1	5823.6	9410.7
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Total Changes	-	-	-	-	-
Current Estimate	67.0	2280.0	1240.1	5823.6	9410.7

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

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

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	223.8	0.0	0.0	223.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	223.8	-	-	223.8

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Chem Demil, December 31, 1994

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

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Planning Estimate	189.0	0.0	0.0	189.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	189.0	-	-	189.0

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

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

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

	RDTEE	PROC	O&M	TOTAL
Development Estimate	0.0	269.3	705.4	974.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	-	269.3	705.4	974.7

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

CSEPP

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	O&M	TOTAL
Development Estimate	0.0	254.9	628.2	883.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	-	254.9	628.2	883.1

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

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

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

	RD&E	PROC	O&M	TOTAL
Development Estimate	154.6	95.2	957.8	1207.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	154.6	95.2	957.8	1207.6

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

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Development Estimate	134.8	84.1	772.8	991.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	134.8	84.1	772.8	991.7

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):

CSDP

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1189.389	--	--	--	--	--	--	--	--	1189.389

Alternative Technology
Not Applicable.

CSEPP

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
121.838	--	--	--	--	--	--	--	--	121.838

NSCMP

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1207.600	--	--	--	--	--	--	--	--	1207.600

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

a. Procurement --

<u>TOCDF Systems Contractor:</u>	Initial Contract Price		Qty
	<u>Target</u>	<u>Ceiling</u>	
EG&G Defense Mat Div, San Diego, CA DACAB7-89-C-0076, CPAP Award: July 1, 1989 Definitized: July 1, 1989	\$211.0	\$211.0	1

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15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$442.0	\$442.0	1	\$883.5	\$883.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.7	\$-8.6
Cumulative Variances To Date (11/30/94)	\$-4.7	\$-8.6
Net Change	\$0.0	\$0.0

Explanation of Change: None.

CSSR requirements are currently being reviewed and the results will be incorporated in future reports.

Options are incrementally negotiated and funded each year, as Contractor estimate at completion (EAC) contains the following:

\$343.0M Balance of Operations Proposal

(Contractor submitted proposal for \$462M and \$119M of this proposal is part of the current contract ceiling price of \$442M)

26.0M Equitable Adjustment (6 month schedule increase)
60.0M PAS Filter

\$429.0M Subtotal
\$454.5M Contractor's CSSR EAC

\$883.5M Current contractor EAC

Note: Potential liability for property county tax at Tooele -\$6.0M/yr needed, to support the Chem Demil implementation schedule.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>Equipment Acquisition:</u> Bechtel National, INC, San Francisco, CA DACA87-89-C-0007, CPFF Award: December 1, 1988 Definitized: December 1, 1988	\$284.3	\$284.3	8

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$763.3	\$763.3	8	\$877.0	\$763.3

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

CSSR requirements are currently being reviewed and the results will be incorporated in future reports.

Options are incrementally negotiated and funded each year, as needed, to support the Chem Demil implementation schedule.

Program Manager's estimate at completion assumes that not all options will be exercised and is thus lower than the contractor's estimate.

<u>Design & Systems Integ:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Ralph M. Parsons Company, Pasadena, CA DACAB7-86-C-0084, CPFF Award: July 1, 1986 Definitized: July 1, 1986	\$52.4	\$52.4	9

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$184.4	\$184.4	9	\$243.7	\$259.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

CSSR requirements are currently being reviewed and the results will be incorporated in future reports.

This contract is incrementally funded with only certain tasks under the contract being authorized for each fiscal year.

Figures for initial and current contract prices are awarded scope and options as of the original award in July 1986 and as of now (Contract Modification 127), respectively.

The contractor's Estimated Price at Completion equals the value of the contract assuming all options are exercised at their current value and not considering inflation. The government's Price at

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15. Contract Information (Cont'd):

Completion is the sum of current LCCE estimates for this contract and includes budgeted work/scope which has not yet been negotiated with the contractor.

Contract figures include Military Construction, Procurement and O&M funds.

The reasons for the differences between original contract price and price at completion are:

- Contract is incrementally funded each year.
- The contract completion date has changed from 1994 to 2003.
- Original contract was based on copying the JACADS design for each CONUS site whereas site-specific designs are now required.
- Lessons learned are being incorporated into all designs.
- There is significant work due to environmental and safety requirements which was not recognized in the original contract.
- Significant support to the sites' systems contractors has been determined to be necessary.

<u>Equipment Installation:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Raytheon Engrs & Construc, Denver, CO				
DACAB7-84-C-0081, CPFF	\$50.5	\$50.5	9	
Award: September 1, 1984				
Definitized: September 1, 1984				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$331.3	\$331.3	9	\$474.0	\$474.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

CSSR requirements are being reviewed and the results will be incorporated in future reports.

Options are incrementally negotiated and funded each year, as needed, to support the Chem Demil implementation schedule.

Contractor estimated at completion is based on the assumption that all contract options will be executed.

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15. Contract Information (Cont'd):

<u>Chem Demil Training Faci:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
General Physics, Columbia, MD					
DACAS7-89-C-0061, CPAF	\$36.2	\$36.2	1		
Award: June 26, 1989					
Definitized: June 26, 1989					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$43.5	\$43.5	1	\$41.4	\$40.9
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u> <u>Schedule Variance</u>		
			\$0.8 \$-0.2		
<u>Cumulative Variances To Date (11/30/94)</u>			<u>\$0.8</u> <u>\$-0.2</u>		
<u>Net Change</u>			<u>\$0.0</u> <u>\$0.0</u>		
<u>Explanation of Change:</u> None.					

b. O & M --

<u>Operator & Maintenance:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
RE&C, Philadelphia, PA					
DACAS7-86-C-0098, CPAF	\$9.8	\$9.8	1		
Award: August 25, 1986					
Definitized: August 25, 1986					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$660.4	\$660.4	1	\$660.4	\$660.4
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u> <u>Schedule Variance</u>		
			\$ \$		
<u>Cumulative Variances To Date</u>			<u>\$</u> <u>\$</u>		
<u>Net Change</u>			<u>\$0.0</u> <u>\$0.0</u>		
<u>Explanation of Change:</u> None.					

Initial contract price was to destroy the M55 rockets at JACADS

CSSR requirements are being reviewed and the results will be incorporated in future reports.

This is an incrementally funded and negotiated contract.

Current contract ends on 26 Aug 96.

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

a. Program Status --

Total Program

- (1) Percent Program Completed: 44.4% (8 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 24.5% (\$3207.7 / \$13110.6)

CSDP

- (1) Percent Program Completed: 44.4% (8 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 25.9% (\$2769.4 / \$10704.5)

Alternative Technology

- (1) Percent Program Completed: 22.2% (2 yrs/9 yrs)
- (2) Percent Program Cost Appropriated: 13.4% (\$30.1 / \$223.8)

CSEPP

- (1) Percent Program Completed: 47.1% (8 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 35.7% (\$347.6 / \$974.7)

NSCMP

- (1) Percent Program Completed: 28.6% (4 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 5.0% (\$60.6 / \$1207.6)

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Chem Demil, December 31, 1994

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

Total Program

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

Total Program					
Appropriation	Prior Years (FY88-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2005)	Total
RDT&E	107.7	53.4	45.1	232.8	439.0
Procurement	978.0	299.4	351.6	1212.3	2841.3
MILCON	433.4	108.0	252.3	579.9	1373.6
O&M	1688.6	393.9	432.0	5942.2	8456.7
Total	3207.7	854.7	1081.0	7967.2	13110.6

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

CSDP					
Appropriation	Prior Years (FY88-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2005)	Total
RDT&E	60.6	-	-	-	60.6
Procurement	847.6	246.5	306.4	1076.3	2476.8
MILCON	433.4	108.0	252.3	579.9	1373.6
O&M	1427.8	319.3	339.6	4706.8	6793.5
Total	2769.4	673.8	898.3	6363.0	10704.5

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

Alternative Technology

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

<u>Alternative Technology</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY94-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2002)	<u>Total</u>
RDT&E	30.1	16.0	17.0	160.7	223.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	30.1	16.0	17.0	160.7	223.8

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

<u>CSEPP</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY88-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2004)	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	126.8	26.3	20.0	96.2	269.3
MILCON	-	-	-	-	-
O&M	220.8	58.8	58.0	367.8	705.4
Total	347.6	85.1	78.0	464.0	974.7

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

NSCMP

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

NSCMP

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2005)</u>	<u>Total</u>
RDT&E	17.0	37.4	28.1	72.1	154.6
Procurement	3.6	26.6	25.2	39.8	95.2
MILCON	-	-	-	-	-
O&M	40.0	15.8	34.4	867.6	957.8
Total	60.6	79.8	87.7	979.5	1207.6

c. Annual Summary -- CSDP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2050 Military Construction, Army

1989				77.0	65.7	64.9	64.5	4.2
1990								4.1
1991				88.9	82.4	71.3	70.6	4.3
1992				138.7	132.4	89.0	83.5	3.0
1993				15.3	15.0			2.7
1994				113.9	113.9	1.6	0.5	2.5
Subtot				433.8	409.4	226.8	219.1	
Army				433.8	409.4	226.8	219.1	

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies

1988		6.0		6.0	4.9	4.8	4.8	3.0
1989		20.9		20.9	17.8	17.6	17.6	4.2
1990		8.9		8.9	7.9	7.9	7.9	4.1
1991		5.7		5.7	5.3	5.3	5.3	4.3
1992		14.6		14.6	13.9	13.9	13.2	3.0
1993		6.6		6.6	6.5	6.5	1.1	2.7
1994		4.3		4.3	4.3	0.8		2.0
Subtot		67.0		67.0	60.6	56.8	49.9	

Appropriation: 0300 Procurement, Defense Agencies

1988			117.7	117.7	96.4	96.0	94.6	3.0
1989			42.5	42.5	36.3	36.2	35.6	4.2
1990	1		47.7	47.7	42.4	42.3	41.3	4.1
1991			105.1	105.1	97.4	97.3	94.0	4.3
1992			143.3	143.3	136.8	136.7	101.4	3.0
1993			239.5	239.5	234.8	109.6	38.3	2.7
1994			17.1	17.1	17.1	12.7	4.7	2.0
1995			176.2	176.2	186.4			2.7

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1996	1		228.6	228.6	246.5			3.0
1997			275.9	275.9	306.4			3.0
1998			195.3	195.3	223.4			3.0
1999			200.8	200.8	236.6			3.0
2000	3		187.1	187.1	227.1			3.0
2001	1		64.5	64.5	80.6			3.0
2002	2		210.3	210.3	270.8			3.0
2003	1		24.7	24.7	32.7			3.0
2004			3.7	3.7	5.1			3.0
Subtot	9		2280.0	2280.0	2476.8	530.8	409.9	

Appropriation: 0500 Military Construction, Defense Agencies

1995				22.0	24.0			2.7
1996				95.9	108.0			3.0
1997				217.6	252.3			3.0
1998				181.4	216.7			3.0
1999				144.1	177.3			3.0
2000				97.8	123.9			3.0

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0500 Military Construction, Defense Agencies (Cont'd)

2001				47.5	62.0			3.0
Subtot				806.3	964.2			

Appropriation: 0100 Operation & Maintenance, Defense Agencies

1988				115.4	94.5	93.5	93.5	3.0
1989				133.4	113.9	111.8	111.8	4.2
1990				180.3	160.2	158.2	147.3	4.1
1991				164.3	152.3	150.9	136.0	4.3
1992				189.2	180.6	180.2	173.8	3.0
1993				217.5	213.2	208.5	186.4	2.7
1994				222.3	222.3	222.1	166.4	2.0
1995				274.8	290.8	76.8	4.7	2.7
1996				296.1	319.3			3.0
1997				305.8	339.6			3.0
1998				353.4	404.2			3.0
1999				418.0	492.5			3.0
2000				453.8	550.7			3.0
2001				486.3	607.8			3.0

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies (Cont'd)

2002				820.3	1056.1			3.0
2003				849.1	1125.9			3.0
2004				334.5	456.8			3.0
2005				9.1	12.8			3.0
Subtot				5823.6	6793.5	1202.0	1019.9	
DoD	9	67.0	2280.0	8976.9	10295.1	1789.6	1479.7	
Grand Total	9	67.0	2280.0	9410.7	10704.5	2016.4	1698.8	

c. Annual Summary -- Alternative Technology

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies

1994		20.7		20.7	20.7	2.1	0.9	2.0
1995		8.9		8.9	9.4			2.7
1996		14.8		14.8	16.0			3.0
1997		15.3		15.3	17.0			3.0

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1998		14.9		14.9	17.0			3.0
1999		17.0		17.0	20.0			3.0
2000		16.5		16.5	20.0			3.0
2001		12.8		12.8	16.0			3.0
2002		68.1		68.1	87.7			3.0
Subtot		189.0		189.0	223.8	2.1	0.9	
Grand Total		189.0		189.0	223.8	2.1	0.9	

c. Annual Summary -- CSEPP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies

1989		9.3		9.3	7.9	7.9	7.8	4.2
1990		33.5		33.5	29.8	29.8	28.6	4.1
1991		19.1		19.1	17.7	17.7	13.8	4.3
1992		15.7		15.7	15.0	15.0		3.0

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1993		13.8		13.8	13.5	13.5	7.2	2.7
1994		31.7		31.7	31.7	23.4	20.1	2.0
1995		10.6		10.6	11.2			2.7
1996	1	24.4		24.4	26.3			3.0
1997		18.0		18.0	20.0			3.0
1998		23.6		23.6	27.0			3.0
1999		11.5		11.5	13.6			3.0
2000	3	12.1		12.1	14.7			3.0
2001	1	10.5		10.5	13.1			3.0
2002	2	9.9		9.9	12.8			3.0
2003	1	8.8		8.8	11.7			3.0
2004		2.4		2.4	3.3			3.0
Subtot	8	254.9		254.9	269.3	107.3	77.5	

Appropriation: 0100 Operation & Maintenance, Defense Agencies

1988				3.1	2.5	2.5	2.5	3.0
1989				4.0	3.4	3.4	3.4	4.2
1990				15.6	13.9	13.9	13.9	4.1

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies (Cont'd)

1991				21.6	20.0	20.0	19.8	4.3
1992				27.1	25.9	25.4	23.8	3.0
1993				53.2	52.2	52.1	43.9	2.7
1994				47.7	47.7	47.7	1.8	2.0
1995				52.2	55.2	7.9		2.7
1996				54.5	58.8			3.0
1997				52.2	58.0			3.0
1998				51.4	58.8			3.0
1999				48.9	57.6			3.0
2000				43.6	52.9			3.0
2001				47.0	58.7			3.0
2002				45.4	58.4			3.0
2003				36.0	47.7			3.0
2004				24.7	33.7			3.0
Subtot				628.2	705.4	172.9	109.1	
Grand Total	8	254.9		883.1	974.7	280.2	186.6	

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Chem Demil, December 31, 1994

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

c. Annual Summary -- NSCMP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies

1994		5.7		5.7	5.7	4.3	3.0	2.0
1995		10.7		10.7	11.3	1.6		2.7
1996		34.7		34.7	37.4			3.0
1997		25.3		25.3	28.1			3.0
1998		19.5		19.5	22.3			3.0
1999		6.5		6.5	7.6			3.0
2000		5.4		5.4	6.5			3.0
2001		5.4		5.4	6.7			3.0
2002		5.4		5.4	6.9			3.0
2003		5.4		5.4	7.1			3.0
2004		5.4		5.4	7.4			3.0
2005		5.4		5.4	7.6			3.0
Subtot		134.8		134.8	154.6	5.9	3.0	

Appropriation: 0300 Procurement, Defense Agencies

1994		2.2		2.2	2.2	2.2	0.8	2.0
1995		1.3		1.3	1.4			2.7

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Chem Demil, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1996		24.7		24.7	26.6			3.0
1997		22.7		22.7	25.2			3.0
1998		9.4		9.4	10.8			3.0
1999								3.0
2000	1	21.0		21.0	25.5			3.0
2001		2.8		2.8	3.5			3.0
Subtot	1	84.1		84.1	95.2	2.2	0.8	

Appropriation: 0100 Operation & Maintenance, Defense Agencies

1992				2.3	2.2	2.2	2.2	3.0
1993				6.4	6.3	6.3	5.6	2.7
1994				21.3	21.3	21.2	6.4	2.0
1995				9.6	10.2	0.9	0.2	2.7
1996				14.7	15.8			3.0
1997				31.0	34.4			3.0
1998				35.0	40.0			3.0
1999				144.6	170.4			3.0
2000				70.6	85.7			3.0

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Chem Demil, December 31, 1994

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

NSCMP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies (Cont'd)

2001				113.9	142.4			3.0
2002				136.6	175.8			3.0
2003				78.8	104.5			3.0
2004				76.4	104.3			3.0
2005				31.6	44.5			3.0
Subtot				772.8	957.8	30.6	14.4	
Grand Total	1	218.9		991.7	1207.6	38.7	18.2	

17. Production Rate Data:

CSDP

a. Deliveries (Plan/Actual) -- None.

Zero/Zero

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

Alternative Technology

a. Deliveries (Plan/Actual) -- None.

Zero/Zero

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

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

CSEPP

a. Deliveries (Plan/Actual) -- None.

Zero/Zero

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

NSCMP

a. Deliveries (Plan/Actual) -- None.

Zero/Zero

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

18. Operating and Support Costs:

CSDP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

b. Costs -- None.

c. Contractor Support Costs -- None.

Alternative Technology

a. Assumptions and Ground Rules --

N/A

b. Costs -- None.

c. Contractor Support Costs -- None.

CSEPP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

b. Costs -- None.

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

c. Contractor Support Costs -- None.

NSCMP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

b. Costs -- None.

c. Contractor Support Costs -- None.

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

AS OF DATE: December 31, 1994

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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
 (FMS377)
 NAVAL SEA SYSTEMS COMMAND
 ARLINGTON, VA 22242-5160

MR. E. E. SHOULTS

Assigned: April 29, 1985

AV 332-8511 COMM (703)

CLEARED
 FOR OPEN PUBLICATION

4. Program Elements/Procurement Line Items:

RDTE&E:

PE 0604567N (Shared) Project 1803, S0857

PROCUREMENT:

APPN 1611 ICN 5105 (Navy)

MILCON:

PE 0204796N (Shared), 0805796N (Shared)

5. Related Programs:

AALC; LHD; LSD 41; LSD 41 (CV)

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

95-C-0314

Ann J. Anderson

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95 0833

LCAC, December 31, 1994

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 93, production contracts had been awarded for a total of 91 craft and 66 craft had been delivered. The FFP contract for the remaining seven craft in the program was awarded to Textron Marine and Land Systems (name changed from Textron Marine Systems in April 1994) on 12 Jan 93. For AGM this meant no further production craft beyond the last craft delivered 30 Jun 93.

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7b. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --
Textron Marine and Land Systems (TM&LS) delivered 8 craft in 1994;
74 of 91 craft have been delivered as of December 1994.

The ACU5 MILCON project (PACFLT located at Marine Corps Base, Camp Pendleton, CA) was funded in FY95 and the ACU4 MILCON project (LANTFLT located at Naval Amphibious Base, Little Creek, VA) remains delayed until FY98. Each ACU is currently assigned between 35 and 40 craft with each ultimately assigned 45 (one craft is permanently assigned to Coastal Systems Station, Panama City, Florida). Each ACU is a dedicated support base for administration, training, maintenance, and supply.

The LCAC Program has been shown to satisfy the mission requirement.

c. Changes Since As Of Date --
The LCAC Program will be over 90% expended by month end March 1995; therefore, in accordance with 10 USC 2432, this SAR will be the final SAR.

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 --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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

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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, Material Support Date was rescheduled to Nov 91. Naval Support Date was rescheduled to Nov 01 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 April 20, 1990.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program</u>		<u>Demon-</u>	<u>Current</u>
		<u>Objective/Threshold</u>		<u>strated</u>	
				<u>Perf</u>	<u>Estimate</u>
Operating Crew	5	5	/ 5	5	5
Troop Capacity	24	24	/ 24	24	24
(Internal)					
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	34	34	/ 34	29.6	34
Total (CM&PM)					
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 is

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

NAE Approved Acquisition Program Baseline dated April 20, 1990.

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

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	21.2	33.5	31.3
Procurement	1023.6	2128.6	1799.3
Sailaway	(1006.9)		(1795.6)
Peculiar Support	(3.3)		(3.7)
Initial Spares	(13.4)		(0.0)
Construction (MILCON)	58.5	87.0	86.7
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 82 Base-Year \$	1103.3	2249.1	1917.3
Escalation	507.4	623.1	468.2
Development (RDT&E)	(0.2)	(0.0)	(-0.6)
Procurement	(489.3)	(596.2)	(440.7)
Construction (MILCON)	(17.9)	(26.9)	(28.1)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1610.7	2872.2	2385.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	60	105	91
Total	60	105	91

c. Foreign Military Sales/International Cooperative Programs --

There is a commercial sale for hardware between TM&LS and the Japanese Government. There is a Navy FMS case for logistics support (conferences, training, publications, engineering technical services, and program management) in the amount of \$6.9M. There is no impact on schedule and cost of the domestic LCAC program.

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

d. Nuclear Costs -- None.

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 April 20, 1990.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (APR 90 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY82\$)	1917.3	2249.1	
(2) Quantity	91	105	
(3) Unit Cost	21.069	21.420	-1.638
b. Procurement			
(1) Cost (BY82\$)	1799.3	2128.6	
(2) Quantity	91	105	
(3) Unit Cost	19.773	20.272	-2.466

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13. Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	21.4	1512.9	76.4	1610.7
Previous Changes:				
Economic	-2.8	-418.0	-4.3	-425.1
Quantity	-	+842.1	-	+842.1
Schedule	-	+28.5	-	+28.5
Engineering	-	+2.9	-	+2.9
Estimating	+12.1	+291.0	+56.8	+359.9
Other	-	-	-	-
Support	-	-16.2	-	-16.2
Subtotal	+9.3	+730.3	+52.5	+792.1
Current Changes:				
Economic	-	13.4	-0.3	+13.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-16.6	-13.8	-30.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-3.2	-14.1	-17.3
Total Changes	+9.3	+727.1	+38.4	+774.8
Current Estimate	30.7	2240.0	114.8	2385.5

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

a. Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	21.2	1023.6	58.5	1103.3
Previous Changes:				
Quantity	-	+557.4	-	+557.4
Schedule	-	-1.2	-	-1.2
Engineering	-	+2.3	-	+2.3
Estimating	+10.1	+240.1	+38.6	+288.8
Other	-	-	-	-
Support	-	-13.0	-	-13.0
Subtotal	+10.1	+785.6	+38.6	+834.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-9.9	-10.4	-20.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-9.9	-10.4	-20.3
Total Changes	+10.1	+775.7	+28.2	+814.0
Current Estimate	31.3	1799.3	86.7	1917.3

b. Previous Change Explanations --

RDTE

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 31 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

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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, correction to Dec 92 SAR by reclassification of quantity and engineering variances, revised economic escalation indices, and economic adjustment for negative program change. 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, correction to Dec 92 SAR by reclassification of estimating variances, adjustment for current and prior inflation.

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 projects to support additional craft and rephasing of projects, current and prior inflation offset, and increased cost estimates. Reduction based on revised program estimates, rephasing of projects, adjustment for current and prior inflation, and returned costs on completed projects.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+10.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+3.3

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Estimating)	-7.6	-12.5
Actual Costs on Completed Portion of Program (Estimating)	-0.7	-1.2
Revised Program and Post Delivery Costs (Estimating)	-1.6	-2.9
Procurement Subtotal	-9.9	-3.2

(2) MILCON

Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.3
Revised Cost Estimates (Estimating)	-2.2	-3.3
Deletion of Projects in FY86 and FY90 as not LCAC projects (Estimating)	-3.5	-4.3
Addition of project in FY92 nor previously included (Estimating)	+2.3	+3.3
Return Cost Adjustments (Estimating)	-7.3	-9.8
MILCON Subtotal	-10.4	-14.1

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
26.845	-4.527	0.108	0.313	0.032	3.621	--	-0.178	-0.631	26.214

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

a. Procurement --

<u>LCAC 61-72 CONSTRUCTION:</u> TEXTRON MARINE & LAND SY, NEW ORLEANS, LA N00024-91-C-2201, FFP Award: April 24, 1991 Definitized: April 24, 1991	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$122.1	N/A	12

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15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$124.1	N/A	12	\$124.1	\$124.1
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$2.5	\$-4.1
Cumulative Variances To Date (12/31/94)			\$2.7	\$-0.9
Net Change			\$0.2	\$3.2

Explanation of Change:

Cost Variance: No significant cost variance.

Schedule Variance: The majority of favorable variance of \$3.2M is due to construction labor, overhead, and material recoveries.

The PM's Estimated Price at Completion takes these variances into consideration.

This contract has not been current since July 1994 (last craft delivered July 1994, contract was 97.4% complete in July 1994, and no additional modifications were anticipated).

The Program Manager's (PMs) Estimated Price at Completion reflects the current Firm Fixed Price (FFP) value of \$124.1M.

<u>LCAC 73-84 CONSTRUCTION:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TEXTRON MARINE SYSTEMS, NEW ORLEANS, LA			\$122.6	N/A	12
N00024-91-C-2201, FFP					
Award: May 22, 1992					
Definitized: May 22, 1992					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$129.1	N/A	12	\$129.1	\$129.1
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-0.3	\$11.6
Cumulative Variances To Date (12/31/94)			\$-1.2	\$-5.3
Net Change			\$-0.9	\$-16.9

Explanation of Change:

Cost Variance: There is no significant cost variance.

Schedule Variance: The unfavorable variance of \$-16.9M is identified

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15. Contract Information (Cont'd):

with late construction material deliveries.

The Program Manager's (PMs) Estimated Price at Completion reflects the current Firm Fixed Price (FFP) value of \$129.1M.

<u>LCAC 85-91 CONSTRUCTION:</u>			<u>Initial Contract Price</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
TEXTRON MARINE SYSTEMS, NEW ORLEANS, LA				
N00024-93-C-2202, FFP			\$111.9	N/A
Award: January 12, 1993				7
Definitized: January 12, 1993				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$112.1	N/A	7	\$112.1	\$112.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$7.2
Cumulative Variances To Date (12/31/94)	\$-1.1	\$3.4
Net Change	\$-1.1	\$-3.8

Explanation of Change:

Cost Variance: There is no significant cost variance.

Schedule Variance: The favorable schedule variance of \$3.4M is attributed primarily to the early receipt of material. The negative net change of \$-3.8M is attributed to the material plan catching up with the previously attained program.

The Program Manager's (PMs) Estimated Price at Completion reflects the current Firm Fixed Price (FFP) value of \$112.1M.

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

a. Program Status --

- (1) Percent Program Completed: 86.4% (19 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 99.5% (\$2373.0 / \$2385.5)

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

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

<u>Appropriation</u>	<u>Prior Years (FY77-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98)</u>	<u>Total</u>
RDT&E	30.7	-	-	-	30.7
Procurement	2235.6	2.4	1.2	0.8	2240.0
MILCON	106.7	-	-	8.1	114.8
O&M	-	-	-	-	-
Total	2373.0	2.4	1.2	8.9	2385.5

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

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LCAC, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1986				2.6	3.1	3.1	3.1	2.8
1987				2.1	2.6	2.6	2.6	2.7
1988				0.8	1.0	1.0	1.0	3.0
Subtot				31.3	30.7	30.7	30.7	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1981				50.5	53.5	53.5	53.5	9.6
1982	3	55.0	120.6	105.9	115.5	115.1	115.1	7.5
1983	3		80.1	63.0	69.8	67.9	67.9	3.8
1984	6		156.4	149.8	169.3	167.8	166.9	3.6
1985	9		201.5	228.2	263.1	253.9	253.5	2.1
1986	12		230.3	222.2	262.1	261.4	260.6	1.4
1987				20.7	25.0	24.5	24.5	1.5
1988				30.7	38.1	38.0	38.0	2.6
1989	15		255.0	238.0	304.1	300.8	300.8	3.3
1990	12		202.0	204.0	268.0	268.0	265.4	1.1
1991	12		197.8	197.5	267.4	261.8	249.1	1.6
1992	19		296.9	278.7	389.3	323.2	205.4	2.5

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LCAC, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1993				3.5	5.0	5.0	3.5	3.2
1994				2.1	3.0	2.5	1.2	4.1
1995				1.6	2.4			2.7
1996				1.6	2.4			3.0
1997				0.8	1.2			3.0
1998				0.5	0.8			3.0
Subtot	91	55.0	1740.6	1799.3	2240.0	2143.4	2005.4	

The SCN total will be reduced by \$19.2M from \$2240.0M to \$2220.8M to reflect returned costs and unobligated balances outside the obligation work limiting date.

Appropriation: 1205 Military Construction, Navy

1984				17.1	19.5	19.5	19.5	3.8
1985				18.3	21.6	21.6	21.6	3.4
1986				13.7	16.6	16.4	16.4	2.8
1987								2.7
1988								3.0
1989								4.2
1990								4.0

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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: 1205 Military Construction, Navy (Cont'd)

1991				13.7	19.8	18.0	17.9	4.3
1992				14.6	21.6	20.9	20.8	2.8
1993								2.7
1994								2.0
1995				4.7	7.6	7.2		2.7
1996								3.0
1997								3.0
1998				4.6	8.1			3.0
Subtot				86.7	114.8	103.6	96.2	
Grand Total	91	55.0	1740.6	1917.3	2385.5	2277.7	2132.3	

The effective date for obligations and expenditures is month end March 1995.

The program total will be reduced by \$19.2M from \$2385.5M to \$2366.3M to reflect SCN returned costs and unobligated balances outside the obligation work limiting date.

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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 --

No quantities are funded for the budget year and out.

Last quantity buy was in FY92.

c. Deliveries (Plan/Actual) --

	<u>To Date</u>
RDT&E	0/0
Procurement	74/74

d. Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development	Current	Latest Approved
	<u>Estimate</u>	<u>Estimate</u>	<u>Threshold</u>
@ Qty 91 - @ Peak Rate: 0.5/mo			
FY 82 Base-Year \$	16.400	19.841	20.237
Then Year \$	24.300	24.607	25.909
@ Qty 12 (1st three years) - @ Peak Rate: 0.5/mo			
FY 82 Base-Year \$	23.800	34.367	28.825
Then Year \$	30.000	38.408	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, per craft for crew personnel, and per craft for 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

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18a. Operating and Support Costs (Cont'd):
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 FY82 Base Year estimated Direct Operation and Maintenance cost is \$0.4M and \$1.7M, respectively per hour. The Direct Personnel and Indirect Costs are based on an average annual cost per craft.

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	11.1	0.6	0.6	0.2	12.5
Industrial Fund	---	---	---	---	---
Total	11.1	0.6	0.6	0.2	12.5

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PROGRAM: LHD - 1

AS OF DATE: December 31, 1994

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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)

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MAR 29 1995 2

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)

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

No Security Objection
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Office of...
Naval Operations
Dept. of the Navy

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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.

A competitive contract for LHD 2, with options for LHD 3 and 4, was awarded to ISI in September 1986. LHD 2 was delivered in July 1992. The option for LHD 3 was exercised in November 1987 and the ship delivered in August 1993. LHD 4 was launched in August 1993.

A competitive contract for the LHD 5, with unevaluated and undefinitized options for LHD 6 and 7, was awarded to ISI in December 1991 and fabrication of LHD 5 began in August 1993. A contract option for LHD 6 was exercised in December 1992.

b. (U) Significant Developments Since Last Report --

LHD 3 Final Contract Trials were completed 13 May 1994 and Post Shakedown Availability (PSA) completed 18 November 1994. Acceptance Trials on LHD 4 were completed 28 September 1994 and the ship delivered 21 November 1994. LHD 5 Keel Laying ceremony was held on 22 June 1994. LHD 6 construction began 25 July 1994. The LHD 7 contract option was extended to 31 Dec 95 based on the FY95 Appropriation Bill.

The LHD 1 Program has been shown to satisfy the mission requirement.

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

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

8. (U) Threshold Breaches:

There are currently no Acquisition Program Baseline (APB) (dated 11 Feb 94) breaches or Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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 (MSD) was rescheduled to Jul 89 and Naval Support Date (NSD) 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

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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 February 11, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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

(b)(1)

Armament:

Close in Weapon System	3	3 / 3	3	3
Self Defense Missile System	2	2 / 2	2	2

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.

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

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 February 11, 1994.

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	6432.1	6303.1
Sailaway	(2872.5)		(6280.9)
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	0.0	0.0
Total FY 82 Base-Year \$	2931.8	6481.0	6345.9
Escalation	1519.2	1943.2	2314.8
Development (RDT&E)	(3.7)	(6.0)	(5.5)
Procurement	(1515.5)	(1937.2)	(2309.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	4451.0	8424.2	8660.7
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3	7	7
Total	3	7	7

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.

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated February 11, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (FY82\$)	6345.9	6481.0	
(2) Quantity	7	7	
(3) Unit Cost	906.56	925.86	-2.08
b. (U) Procurement			
(1) Cost (FY82\$)	6303.1	6432.1	
(2) Quantity	7	7	
(3) Unit Cost	900.44	918.87	-2.01

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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	43.6	4407.4	0.0	4451.0
Previous Changes:				
Economic	-0.4	-1448.2	-	-1448.6
Quantity	-	+5552.1	-	+5552.1
Schedule	+4.5	-72.0	-	-67.5
Engineering	-	-0.4	-	-0.4
Estimating	+0.6	+27.2	-	+27.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.7	+4058.7	-	+4063.4
Current Changes:				
Economic	-	5.1	-	+5.1
Quantity	-	-	-	-
Schedule	-	100.1	-	+100.1
Engineering	-	12.7	-	+12.7
Estimating	-	28.4	-	+28.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+146.3	-	+146.3
Total Changes	+4.7	+4205.0	-	+4209.7
Current Estimate	48.3	8612.4	-	8660.7

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

a. (U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	39.9	2891.9	0.0	2931.8
Previous Changes:				
Quantity	-	+3395.2	-	+3395.2
Schedule	+3.4	+52.1	-	+55.5
Engineering	-	-1.6	-	-1.6
Estimating	-0.5	-94.4	-	-94.9
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.9	+3354.1	-	+3357.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	28.6	-	+28.6
Engineering	-	9.1	-	+9.1
Estimating	-	19.4	-	+19.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+57.1	-	+57.1
Total Changes	+2.9	+3411.2	-	+3414.1
Current Estimate	42.8	6303.1	-	6345.9

b. (U) Previous Change Explanations --

RDTE

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 - 7, including associated advance procurement; and

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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 and LHD 6 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 and C3 communication upgrade for LHD 6.

Estimating: Reductions based on very favorable competitive basic award (LHD 2, 3 and 4); returned cost for completed program; reduction for GFE repricing; mis-categorization of acquisition strategy change from schedule and undistributed congressional funds for FY94 PFR&D Centers. Increases based on revised program estimates; deferred work on LHD 2 and 3; addition of LHD 6 and 7; lump sum benefit request for equitable adjustment; reduced vendor/business base, revised outfitting and post delivery costs and re-categorization from prior SARs for outfitting and post delivery reported in support category.

Support: Adjustments based on prior year inflation.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+5.1
Rescheduled LHD 7 from FY00 to FY01 (Schedule)	+28.6	+100.1
Increase based on new requirements for Women at Sea and Solid Waste System (Engineering)	+9.1	+12.7
Adjustment for Current & Prior Inflation. (Estimating)	-8.7	-11.2
Actual cost on completed portion of program (Estimating)	-7.3	-9.5
Escalation increase to the FY91 and FY94 Programs attributed to FY94 escalation indices (Estimating)	+42.7	+60.0
Refurbished Systems and CFE to GFE savings (Estimating)	-18.5	-26.5

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase based on revised Shipbuilding estimate (Estimating)	+9.4	+12.6
Revised Outfitting and Post Delivery cost estimates for FY99 and prior costs (Estimating)	+1.8	+3.0
Procurement Subtotal	+57.1	+146.3

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

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1483.7	-206.2	-54.7	4.7	1.8	8.0	--	--	-246.4	1237.2

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

a.(U) Procurement --

(U) LHD 4 CONSTRUCTION:

INGALLS SHIPBUILDING, INC, PASCAGOULA, MS

N00024-86-C-2005, FPI

Award: October 3, 1988

Definitized: October 3, 1988

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>

\$366.9	\$391.4	1
---------	---------	---

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$400.1	\$426.4	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$426.4	\$426.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-15.1	\$-28.9
Cumulative Variances To Date (12/25/94)	\$-51.5	\$-3.7
Net Change	\$-36.4	\$25.2

Explanation of Change:

Cost Variance: The majority of unfavorable change is reported by the contractor to be identified with growth in construction labor, material, burden costs (MAPs, overhead and G&A), and unrecoverable escalation.

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

Schedule Variance: The majority of favorable change reported by the contractor is identified with completion of construction labor efforts that were previously behind schedule.

The Navy approved a reprogramming in Mar 89 in the amount of \$164.7M. When the reprogramming without management reserve (\$54.9) is taken into consideration, the negative cost variance to the target cost is \$165.8M.

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 \$82.1M. The projected contract loss is reduced to \$77.3M when the potential ILS Award Fee and Cost of Money are considered.

The LHD 4 will not be reported in future SARs as the ship was delivered 21 Nov 94 and is over 90.0% complete.

			Initial Contract Price		
			Target	Ceiling	Qty
(U) <u>LHD 5 CONSTRUCTION:</u>					
INGALLS SHIPBUILDING, INC, PASCAGOULA, MS					
N00024-92-C-2204, FPI			\$707.0	\$808.0	1
Award: December 20, 1991					
Definitized: December 20, 1991					
			Estimated Price At Completion		
Current Contract Price			Contractor	Program Manager	
Target	Ceiling	Qty			
\$731.9	\$832.7	1	\$789.9	\$803.9	
			Cost Variance	Schedule Variance	
Previous Cumulative Variances			\$-13.6	\$-9.3	
Cumulative Variances To Date (12/25/94)			\$-11.4	\$-19.1	
Net Change			\$2.2	\$-9.8	

Explanation of Change:

Cost Variance - The majority of favorable variance is reported by the contractor to be identified with material, overhead, MAP and Cost of Money savings offset by Labor and G&A growth.

Schedule Variance - The majority of unfavorable variance is reported by the contractor to be identified with construction labor, material and burden costs being behind schedule.

The Navy approved a reprogramming in May 93 in the amount of \$127.7M. When the reprogramming without management reserve (\$2.9M) is taken

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

into consideration, the negative cost variance to the target cost is \$74.0M.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total overrun of \$143.9M, which would result in a net contractor profit of \$15.9M.

The Current Contract Price includes \$24.3M of Firm Fixed Price Construction Contract Line Items (CLINS), while the Initial Contract Price reflects only the Construction CLIN.

			Initial Contract Price		
			Target	Ceiling	Qty
(U) LHD 6 CONSTRUCTION:					
INGALLS SHIPBUILDING, INC, PASCAGOULA, MS					
N00024-92-C-2204, FPI			\$760.9	\$779.2	1
Award: December 11, 1992					
Definitized: December 11, 1992					

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$776.3	\$794.0	1	\$786.7	\$781.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$3.5
Cumulative Variances To Date (12/25/94)	\$-5.6	\$-0.5
Net Change	\$-5.6	\$-4.0

Explanation of Change:

Cost Variance: The majority of unfavorable variance is identified with engineering labor, material, material overhead and escalation recovery.

Schedule Variance: The majority of unfavorable variance is reported by the contractor to be identified with engineering labor, material and burden costs being behind schedule.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total overrun of \$9.5M, which would result in a net contractor profit of \$108.0M.

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

a. (U) Program Status --

(1) Percent Program Completed: 57.7% (15 yrs/26 yrs)

(2) Percent Program Cost Appropriated: 75.2% (\$6515.0 / \$8660.7)

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

<u>Appropriation</u>	<u>Prior Years (FY81-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
ROT&E	48.3	-	-	-	48.3
Procurement	6466.7	13.0	27.4	2105.3	8612.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6515.0	13.0	27.4	2105.3	8660.7

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

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	3.6	4.2
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	46.1	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1982				41.3	45.0	45.0	45.0	7.5
1983				48.4	53.7	53.7	53.6	3.8
1984	1	150.0	1111.6	1159.2	1310.1	1308.9	1293.2	3.6
1985				34.0	39.2	39.2	39.1	2.1
1986	1		769.7	707.8	835.0	830.2	818.5	1.4
1987				29.8	35.9	35.9	35.0	1.5
1988	1		638.2	613.1	761.3	752.3	728.1	2.6
1989	1		621.2	592.2	756.6	695.2	639.6	3.3
1990				36.8	48.4	47.0	45.4	1.1
1991	1		918.5	872.8	1181.4	1030.5	572.2	1.6

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1992				20.9	29.2	28.7	27.1	2.5
1993				243.8	344.8	285.4	111.7	3.2
1994	1		864.5	658.2	958.8	745.5	170.1	4.1
1995				44.9	67.3	1.4		2.7
1996				8.4	13.0			3.0
1997				17.2	27.4			3.0
1998				21.5	35.3			3.0
1999				13.0	21.9			3.0
2000								3.0
2001	1		1207.2	1111.0	1990.1			3.0
2002								3.0
2003								3.0
2004				9.9	19.4			3.0
2005				9.2	18.5			3.0
2006				9.7	20.1			3.0
2007								3.0
Subtot	7	150.0	6130.9	6303.1	8612.4	5898.9	4578.6	
Grand								

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligation	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

Total	7	150.0	6130.9	6345.9	8660.7	5946.4	4624.7	
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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.

b. (U) Cost and Quantity Variances --

At least six quantities must be produced in any one fiscal year.

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

	<u>To Date</u>
RDT&E	0/0
Procurement	4/4

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 (VAMOSOC) 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 limited 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.

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

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.

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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A-26 SINGARS

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

PROGRAM: SINGARS

AS OF DATE: December 31, 1994

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Production Rate Data		25
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1. Designation and Nomenclature (Preferred Name):

Single Channel Ground and Airborne Radio System (SINGARS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Project Manager, Tactical Radio COL Lalit Piplani
Communication Systems Assigned: July 31, 1994
ATTN: SFAE-CM-TRC AV 995-3000 COMM (908) 544-3000
Fort Monmouth, NJ 07703-5005

4. Program Elements/Procurement Line Items:

RDT&E:

PE 63746 (Shared) Project D555
PE 64805 Project D282, D098 (Shared)

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DEPARTMENT OF DEFENSE

George Brownell

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

PROCUREMENT:

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)
APPN 2035	ICN BA9722	(Army)	
APPN 2035	ICN BS9722	(Army)	
APPN 2035	ICN MA9722	(Army)	
APPN 0350	ICN 222000	(NGRE)	(Shared)
APPN 0350	ICN 230000	(NGRE)	(Shared)
APPN 0350	ICN 101025	(NGRE)	(Shared)
APPN 0350	ICN 104000	(NGRE)	(Shared)
APPN 0350	ICN 104025	(NGRE)	(Shared)
APPN 0350	ICN 107000	(NGRE)	(Shared)

5. Related Programs:

None

6. Mission and Description:

SINGGARS is a family of VHF-FM combat net radios which provides the primary means of command and control for Infantry, Armor and Artillery Units. The SINGGARS 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 SINGGARS 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 operates 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 (non-ICOM) radio is provided by use of the VINSON device. An Integrated COMSEC (ICOM) version of the SINGGARS is currently in production. The SINGGARS system is operable in a hostile environment through use of electronic counter-counter measures (ECCM). SINGGARS is replacing the currently standard manpack and vehicular radios, the

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6. Mission and Description (Cont'd):

AN/PRC-77 and the AN/VRC-12 family, respectively. An airborne version of the SINGGARS radio is replacing the currently standard aircraft radios, the AN/ARC-114 and AN/ARC-131.

7. Program Highlights:

a. Significant Historical Developments --
DA approved the SINGGARS ROC in Dec 74. In Jun 77, the VCSA direction resulted in a decision to proceed from Advanced Development (AD) directly into production. The SINGGARS 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 Division (A/CD), Ft. Wayne, IN. The initial SINGGARS airborne production contract was awarded to ITT in May 85, Option 1 in Apr 88, Option 2 Apr 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 a form, fit, function equivalent to the ITT A/CD Integrated COMSEC (ICOM) SINGGARS 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, Option 2 in Nov 92, and Option 3 in Aug 93. A Milestone IIIB review in Dec 90 approved full-rate production awards for the ITT ground and airborne radios in Dec 90 and Jan 91 respectively. A sole-source single year contract was awarded to ITT in Mar 92 with Option 1 awarded in Mar 93 to align with GD for head-to-head competition commencing in FY94. An Aug 93 program review resulted in Defense Acquisition Executive (DAE) approval for award of General Dynamics Option 3 at full-rate production. The SINGGARS program was reclassified from Acquisition Category 1D (DAB) to 1C (Component).

b. Significant Developments Since Last Report --
During FY94, the first limited competition between International Telephone and Telegraph (ITT) and General Dynamics (GD) was held. The total quantity of ground radios procured exceeded 28,000 with ITT and GD receiving shares of 60% and 40% respectively. Based on a comparison with ITT's FY93 price of the Receiver/Transmitter (R/T), a savings was realized totalling approximately \$25 Million. GD's award of nearly 12,000 R/T's has enabled them to increase their monthly production rate to be fully competitive and well positioned for future procurements.

The SINGGARS system is expected to satisfy mission requirements.

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7c. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no DAE Approved Acquisition Program Baseline (dated 18 August 1993) breaches. There are no current Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	DEC 83	DEC 83	DEC 83
Contract Award			
Initial Airborne Production Contract	N/A	MAY 85	MAY 85
Award			
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 1 Award	N/A	APR 88	APR 88
Ground (ITT) Option 1 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	N/A	MAR 89	MAR 89
Production (Non-ICOM)			
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

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
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
Ground (GD) Option 1 Delivery Begins	N/A	DEC 92	DEC 92
ICOM FOT&E (GD)	N/A	FEB 93	FEB 93
ITT Sole-Source (Basic) Award	N/A	MAR 92	MAR 92
ITT Sole-Source (Basic) Delivery Begins	N/A	JUN 93	JUN 93
Second Source (GD) Full Rate Production Program Review	N/A	JUN 93	AUG 93
Organic Support Capability (ITT ICOM)	N/A	FEB 92	FEB 92
Depot Support Capability	N/A	N/A	N/A
ITT	N/A	FEB 92	FEB 92
GD	N/A	MAR 94	MAR 94
ITT Sole-Source (Option) Award	N/A	MAR 93	MAR 93
Ground (GD) Option 3 Award	N/A	JUN 93	AUG 93
Organic Support Capability (GD ICOM)	N/A	JUL 93	JUL 93
Ground (GD) Option 2 Delivery Begins	N/A	NOV 93	NOV 93
ITT Competitive (Basic) Award	N/A	MAR 94	APR 94 (Ch-1)
GD Competitive (Basic) Award	N/A	MAR 94	APR 94 (Ch-1)
ITT Sole-Source (Option) Delivery Begins	N/A	JUN 94	JUN 94
Ground (GD) Option 3 Delivery Begins	N/A	OCT 94	OCT 94
ITT Competitive (Basic) Delivery Begins	N/A	JUN 95	JUN 95
GD Competitive (Basic) Delivery Begins	N/A	NOV 95	NOV 95

b. Previous Change Explanations --

Late start of ITT First Article Test (FAT) plus problems encountered during the first phase of testing resulted in revisions to FAT completion, First Production Deliveries, Third Option award and Initial Operational Capability (IOC) in accordance with the schedule presented at the Dec 86 Joint Requirements and Management Board (JRMHB) review. A contract rebaselining modification signed in Nov 87 revised hardware delivery schedules and resulted in the IOC being

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9b. Schedule (Cont'd):

rescheduled from Dec 89 to Dec 90. A Jun 89 DAE Acquisition Decision Memorandum (ADM) capped deliveries of ICOM RT's at 730 per month until completion of additional operational testing and resulted in the rescheduling of the ITT ICOM Initial Operational Test & Evaluation (IOT&E). 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. 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. 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. Reliability problems and delay in delivery of test hardware resulted in a program decision to postpone start of GD's IOT&E (formerly FOTE) 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 schedule was revised from Jan 92 to Feb 93. GD full-rate production program review and the option 3 award were delayed from Jun 93 to Aug 93 resulting from the lengthy review and approval process for the revised SINGARS acquisition strategy.

c. Current Change Explanations --

(Ch-1) ITT Competitive (Basic) Award and GD Competitive (Basic) Award were delayed from Mar 94 to Apr 94 to permit briefings to DA and OSD advising of the results of best value determinations and the resulting percentages of the total buy awarded to each contractor.

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 August 18, 1993.

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10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
		<u>Objective/Threshold</u>			
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
Airborne (@ 1000 ft)	N/A	35	/ 35	60	35
(Data @ 16 kbps @ 10 ⁻³ Ber)					
Manpack (above 40 MHz)	4.5	4	/ 4	4	4
Vehicular	17.5	17	/ 17	27	17
Mean Time Between Failure Operational Environment (MTBF) (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:

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10a. Performance Characteristics (Cont'd):

- 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 soil conditions, 10% bit error rate (ber).
- 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 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 August 18, 1993.

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

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	154.4	220.2	209.4
Procurement	4013.3	3089.8	2787.3
Major System Equipment	(3151.8)		(2487.8)
Ancillary Equipment	(431.8)		(118.1)
Total Flyaway	(3583.6)		(2605.9)
Total Other Weapon Systems	(25.9)		(154.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(403.8)		(26.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 84 Base-Year \$	4167.7	3310.0	2996.7

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SINCGARS, December 31, 1994

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

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1444.0	1312.6	1191.6
Development (RDT&E)	(-19.0)	(4.5)	(3.4)
Procurement	(1463.0)	(1308.1)	(1188.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year 5	5611.7	4622.6	4188.3

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>292853</u>	<u>246845</u>	<u>254826</u>
Total	292853	246845	254826

Note: Excludes 123 RDTE prototypes from the SAR Baseline and 123 from the Current Estimate that are not considered fully configured.

The unit of measure is the Receiver-Transmitter, the major component contained in the ground and airborne radio.

c. Foreign Military Sales/International Cooperative Programs --

Recipient Country	Case ID	Quantity	*Estimated Cost
-------------------	---------	----------	-----------------

Bahrain	BA-B-JAT/JAH	73	1.2M
Finland	FI-B-YBG	6	.1M
SANG	SI-B-JBP	3,370	88.0M
SANG	SI-B-WBW	501	6.3M
SDAF	N/A	318	6.7M
Spain	SP-N-LDE	4	.1M
Kuwait (Army)	KU-B-JAT	575	7.6M
Kuwait (AF)	KU-B-UGO	35	.5M
Hellenic Republic	GR-B-JAX	128	1.6M

* 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:

DAB Approved Acquisition Program Baseline dated August 18, 1993.

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

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (AUG 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY84\$)	2996.7	3310.0	
(2) Quantity	254826	246845	
(3) Unit Cost	0.012	0.013	-12.301
b. Procurement			
(1) Cost (BY84\$)	2787.3	3089.8	
(2) Quantity	254826	246845	
(3) Unit Cost	0.011	0.013	-12.616

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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	+1.1	+73.3	-	+74.4
Quantity	+11.6	-1064.7	-	-1053.1
Schedule	+2.2	+611.5	-	+613.7
Engineering	+46.4	-	-	+46.4
Estimating	+12.8	-644.1	-	-631.3
Other	-	-	-	-
Support	-	-295.5	-	-295.5
Subtotal	+74.1	-1319.5	-	-1245.4
Current Changes:				
Economic	-	-14.9	-	-14.9
Quantity	-	98.3	-	+98.3
Schedule	-	160.6	-	+160.6
Engineering	-	-	-	-
Estimating	3.3	-425.2	-	-421.9
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	+3.3	-181.3	-	-178.0
Total Changes	+77.4	-1500.8	-	-1423.4
Current Estimate	212.8	3975.5	-	4188.3

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

a. Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	154.4	4013.3	0.0	4167.7
Previous Changes:				
Quantity	+9.7	-522.1	-	-512.4
Schedule	-	-17.0	-	-17.0
Engineering	+35.0	-	-	+35.0
Estimating	+8.1	-342.2	-	-334.1
Other	-	-	-	-
Support	-	-248.6	-	-248.6
Subtotal	+52.8	-1129.9	-	-1077.1
Current Changes:				
Quantity	-	55.3	-	+55.3
Schedule	-	60.9	-	+60.9
Engineering	-	-	-	-
Estimating	2.2	-212.6	-	-210.4
Other	-	-	-	-
Support	-	0.3	-	+0.3
Subtotal	+2.2	-96.1	-	-93.9
Total Changes	+55.0	-1226.0	-	-1171.0
Current Estimate	209.4	2787.3	-	2996.7

b. Previous Change Explanations --

RDTEE

Economic: Revised escalation indices.

Quantity: Addition of 45 prototypes for Integrated COMSEC (ICOM).

Schedule: Rescheduled effort due to funding constraints.

Engineering: Redesign radio and COMSEC device for Integrated COMSEC. Increased scope of work for P3I effort.

Estimating: Revised estimate for ICOM effort and Installation Kit (IK), SINGARS Remote Control Unit (SRCU), and Second Source Test Program Set (TPS) development. Revised estimate for P3I cost studies. Removal of out year funding designated for SINGARS follow-on system. Adjustments of prior year amounts to

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

actuals. Current and prior year inflation offset.

Procurement

Economic: Revised escalation indices.
Quantity: Quantity adjustment due to Force Structure change.
Adjustment due to including/changing other service requirements.
Schedule: Schedule slip resulting from problems during First Article Testing. Cost reduction caused by shortened schedule due to increased annual buys. ICOM deliveries capped until operational testing completed; costs to revise and extend contract delivery schedule for balance of program.
Estimating: Revised estimates for warranty, COMSEC module, installation kits, Battlefield Electronic Communications Systems (BECS), KGV-10, SINCGARS Remote Control Unit (SRCU), and Airborne ICOM production. Revised estimate for ground radios based on other service quantity buys and impact on learning curve calculations. Reduced hardware costs realized by applying learning curve through end of production versus only a specified quantity. Revised estimate for ground radio based on changes in procurement mix of ITT and GD radios. Additional installation kits for POMCUS. Current and prior year inflation offset.
Support: Revised requirement for radio spares, reclassification of initial spares from procurement to Army Stock Fund, elimination of spares requirement for KGV-10 and reduced estimate for data. 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). Addition of costs for Project Management Office salaries, Contractor Field Service Representatives, and Information Management.

c. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	--	--
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to complete ROTE program. (Estimating)	+2.3	+3.4
RD&E Subtotal	+2.2	+3.3
(2) <u>Procurement</u>		
Correct prior SAR Quantity/Estimating Variance.	--	--
(Quantity)	-9.1	-12.0
(Estimating)	+9.1	+12.0
Correct prior SAR Quantity Allocation.	--	--
(Schedule)	+60.9	+99.8
(Estimating)	-60.9	-99.8
Correct prior SAR Economic/Schedule Variance.	--	--
(Economic)	--	+25.3
(Schedule)	--	-25.3
Revised escalation indices. (Economic)	--	-35.4
Economic Adjustment for Negative Program Change. (Economic)	--	-4.8
Adjustment for Current & Prior Inflation. (Estimating)	+8.5	+11.1
Total Variance associated with increase of 6225 units from 248,601 to 254,826.	+71.7	+120.3
Active Army ground radio requirement reduced by 1240 from 193,843 to 192,603 radios. (Quantity)	-12.1	-21.3
Active Army airborne radio requirement increased by 1240 from 7580 to 8820 radios. (Quantity)	+15.5	+24.2
Marine Corps requirement increased 5010 from 29,412 to 34,422 ground radios. (Quantity)	+48.8	+86.1
Air Force requirement increased 21 from 2657 to 2678 ground radios. (Quantity)	+0.2	+0.4
Navy requirement increased 1046 from 3412 to 4458 ground radios. (Quantity)	+10.2	+18.0

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Navy requirement increased 148 from 120 to 268 airborne radios. (Quantity)	+1.8	+2.9
Allocation to Estimating resulting from quantity change. (Estimating)	+7.3	+10.0
Change in annual procurement buy profile. (Schedule)	--	+86.1
Revised estimate based on economies expected from first and second source competition. (Estimating)	-176.6	-358.5
Revised estimate for Total Package Fielding/New Equipment Training (TPF/NET). (Support)	-0.4	-0.8
Adjustment for Current & Prior Inflation. (Support)	+0.7	+0.7
Procurement Subtotal	-96.1	-181.3

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.019	--	-0.001	0.003	--	-0.004	--	-0.001	-0.003	0.016

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

a. Procurement --

<u>SINCGARS SECOND SOURCE:</u> GENERAL DYNAMICS, TALLAHASSEE, FLORIDA, CA DAAB07-88-C-T026, FPAF Award: July 15, 1988 Definitized: July 15, 1988	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$21.9	N/A	400

Current Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$157.2	N/A	22440

Estimated Price At Completion

<u>Contractor</u>	<u>Program Manager</u>
\$292.4	\$316.2

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	<u>N/A</u>	<u>N/A</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

The target price increase of \$5.0M from the December 1993 SAR is due to the incorporation of modifications for Provisioning spares and earned reliability award fee. The contractor's estimate at completion includes their reported loss of \$100+M over the contract period and does not include reliability award fee yet to be earned.

Cost and schedule variance reporting not required for this FPAF contract.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>SINCGARS GROUND PROD:</u>			
ITT CORPORATION, PORT WAYNE, IN			
DAAB07-92-C-G004, FPAF	\$224.7	\$0.0	16000
Award: March 10, 1992			
Definitized: March 10, 1992			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$397.7	\$0.0	33565	\$397.7	\$410.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	<u>N/A</u>	<u>N/A</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

The target price increase of \$8.6M from the December 1993 SAR is due to the incorporation of modifications for engineering change orders, adjustments for spares, and earned reliability award fee. The quantity increase of 1,565 reflects Airborne units excluded previously in error. The contractor's estimate at completion does not include award fee yet to be earned.

Cost and schedule variance reporting not required for this FPAF contract.

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15. Contract Information (Cont'd):

<u>SINGGARS GROUND PROD PY5:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
GENERAL DYNAMICS, TALLAHASSEE, FL				
DAAB07-94-C-C402, FPAF	\$116.0	\$0.0	11369	
Award: April 29, 1994				
Definitized: April 29, 1994				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$116.0	\$0.0	11369	\$116.0	\$121.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
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 is the first time this contract appears in the SAR.

The contractor's EAC does not include reliability award fee yet to be earned.

Cost and schedule variance reporting not required for this FPAF contract.

<u>SINGGARS GROUND PROD PY8:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
ITT CORPORATION, FORT WAYNE, IN				
DAAB07-94-C-C401, FPAF	\$127.2	\$0.0	17053	
Award: April 29, 1994				
Definitized: April 29, 1994				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$127.2	\$0.0	17053	\$127.2	\$135.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
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 is the first time this contract appears in the SAR.

The contractor's EAC does not include reliability award fee yet to be

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

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: 74.1% (20 yrs/27 yrs)
- (2) Percent Program Cost Appropriated: 66.0% (\$2765.4 / \$4188.3)

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

<u>Appropriation</u>	<u>Prior Years (FY76-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RD&E	198.1	7.4	7.3	-	212.8
Procurement	2567.3	366.3	270.8	771.1	3975.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2765.4	373.7	278.1	771.1	4188.3

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1976				0.7	0.4	0.4	0.4	7.5
1977				0.3	0.2	0.2	0.2	1.6
1978				3.2	2.0	2.0	2.0	6.4

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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: 2040 Research, Development, Test + Eval, Army (Cont'd)

1978				9.2	6.2	6.2	6.2	7.1
1979				16.6	12.4	12.4	12.4	9.1
1980				24.4	20.0	20.0	20.0	10.6
1981				27.3	24.4	24.4	24.4	10.6
1982				13.9	13.2	13.2	13.2	7.6
1983				12.0	11.8	11.8	11.8	4.0
1984				10.1	10.3	10.3	10.3	3.8
1985				9.9	10.4	10.4	10.4	3.4
1986				11.1	12.0	12.0	12.0	2.8
1987				13.3	14.8	14.8	14.8	2.7
1988				14.2	16.5	16.5	16.5	3.0
1989				7.6	9.2	9.2	9.2	4.2
1990				10.2	12.8	12.8	12.8	4.1
1991				2.1	2.7	2.7	2.7	4.3
1992				1.3	1.7	1.7	1.7	3.0
1993				5.3	7.2	7.2	6.9	2.7
1994				3.8	5.4	5.4	5.3	2.0
1995				3.1	4.5	1.7		2.7

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1996				5.0	7.4			3.0
1997				4.8	7.3			3.0
Subtot				209.4	212.8	195.3	193.2	

Appropriation: 2031 Aircraft Procurement, Army

1985	150	4.3	10.6	17.5	19.0	19.0	19.0	3.4
Subtot	150	4.3	10.6	17.5	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	19.8	20.3	20.3	20.3	4.0
1984	1325	3.1	56.6	63.4	66.9	66.9	66.9	3.8
1985	10268	0.1	131.4	133.7	145.5	145.5	145.5	3.4
1986	400	0.4	76.8	76.5	85.6	85.6	85.6	2.8
1987				11.2	13.0	13.0	13.0	2.7
1988	720		29.1	26.7	32.2	32.2	32.2	3.0
1989	13599	3.1	155.3	179.2	225.6	225.6	225.6	4.2

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1990	2925	5.4	64.6	62.1	80.8	80.8	80.8	4.1
1991	13811	1.0	199.6	200.7	269.1	269.1	255.8	4.3
1992	16580	5.5	177.8	198.9	273.4	273.4	242.9	3.0
1993	18157	0.6	133.3	146.9	207.4	205.8	105.9	2.7
1994	20563	0.1	230.8	243.8	352.1	302.2	33.7	2.0
1995	22239	0.1	230.0	245.2	366.6	13.9		2.7
1996	19576	0.1	190.7	205.0	312.5			3.0
1997	13989	0.1	122.3	133.8	210.0			3.0
1998	16495	0.1	138.9	140.1	226.6			3.0
1999	8607	0.1	69.8	79.7	132.7			3.0
2000	10560	0.1	70.1	89.7	153.9			3.0
2001	11284		75.9	92.9	164.1			3.0
2002				20.9	38.0			3.0
Subtot	201273	21.1	2170.3	2370.2	3376.3	1734.3	1308.2	
Army	201423	25.4	2180.9	2597.1	3608.1	1948.6	1520.4	

For SAR purposes, the year 2001 quantity has been adjusted from 11,430 to 11,284 for active Army. The adjustment is required to accurately reflect the total Army Acquisition Objective (AAO) of 213,000 radios after revising prior year procurements to actuals.

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1109 Procurement, Marine Corps

1989	2300		21.8	21.8	27.4	27.4	27.4	4.2
1990								4.1
1991								4.3
1992	4100		38.1	38.1	52.4	52.4	36.9	3.0
1993	5450		37.2	37.2	52.5	52.5	22.1	2.7
1994	4539		31.9	31.9	46.1	38.0	4.4	2.0
1995	8563		38.1	38.1	57.0			2.7
1996	3930		31.6	31.6	48.2			3.0
1997	4216		33.9	33.9	53.2			3.0
1998	1324		21.9	21.9	35.4			3.0
Subtot	34422		254.5	254.5	372.2	170.3	90.8	

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
1989	100		0.6	0.6	0.8	0.8	0.8	4.2

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1990								4.1
1991	586		4.3	4.3	5.7	5.7	5.1	4.3
1992	378		2.9	2.9	4.0	4.0	2.8	3.0
1993	948		8.2	8.2	11.6	11.6	4.9	2.7
1994	405		3.7	3.7	5.3	4.0	0.4	2.0
1995	271		2.9	2.9	4.3			2.7
1996	140		1.5	1.5	2.3			3.0
1997	223		2.2	2.2	3.5			3.0
1998	337		3.2	3.2	5.2			3.0
1999	425		4.0	4.0	6.6			3.0
2000	218		1.9	1.9	3.3			3.0
2001	363		3.0	3.0	5.3			3.0
Subtot	4726		40.2	40.2	59.9	28.1	16.0	
Navy	39148		294.7	294.7	432.1	198.4	106.8	

Appropriation: 3080 Other Procurement, Air Force

1991	375		2.1	2.1	2.8	2.8	2.5	4.3
1992	974		5.6	5.6	7.7	7.7	5.4	3.0

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

1993	137		1.1	1.1	1.5	1.5	0.6	2.7
1994	485		4.0	4.0	5.8	5.8	0.6	2.0
1995	178		1.8	1.8	2.7			2.7
1996	220		2.2	2.2	3.3			3.0
1997	309		2.6	2.6	4.1			3.0
Subtot	2678		19.4	19.4	27.9	17.8	9.1	
USAF	2678		19.4	19.4	27.9	17.8	9.1	

Appropriation: 0350 National Guard & Reserve Equipm, Defense

1991	1511		10.7	10.7	14.3	14.3	12.8	4.3
1992	2394		17.0	17.0	23.3	23.3	16.4	3.0
1993	4522		30.0	30.0	42.4	42.4	17.9	2.7
1994	3150		27.8	27.8	40.2	4.3	0.4	2.0
Subtot	11577		85.5	85.5	120.2	84.3	47.5	
DoD	11577		85.5	85.5	120.2	84.3	47.5	
Grand Total	254826	25.4	2580.5	2996.7	4188.3	2249.1	1683.8	

Expenditures and obligations are as of December 31, 1994.

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SINCGARS, December 31, 1994

17. Production Rate Data:

a. Deliveries (Plan/Actual) --		<u>To Date</u>
	RD&E	123/123
	Procurement	83021/86364
b. 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 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 are 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.

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SINGARS, December 31, 1994

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

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	2.6	N/A
Procurement Funded Mat'l	0.1	N/A
Maintenance	0.1	N/A
Military Personnel	0.9	N/A
Oth Operating & Support	0.1	N/A
Total	3.8	N/A

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	2.7	---	---	---	2.7
Total	2.7	---	---	---	2.7

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(0&A)823)
PROGRAM: STANDARD Missile-2

AS OF DATE: December 31, 1994

<u>SUBJECT</u>	<u>INDEX</u>	<u>PAGE</u>
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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:
 THEATER AIR DEFENSE CAPT R. L. WILSON
 (PMS422) Assigned: July 1, 1993
 2521 JEFFERSON DAVIS HIGHWAY AV 332-0662 COMM (703)602-0662
 ARLINGTON, VA 22242-5170

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

RDT&E:
 PE 0604366N Project U0439, U1632
 PROCUREMENT:
 APPN 1507 ICN 0223400N (Navy)
 MILCON:
 PE 0702096N

~~Classified by: ORNAVINT C 5510-00~~

~~Declassify on: OADR~~

~~Downgrade Instructions: NOT SUBJECT TO AUTOMATIC DOWNGRADING~~

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STANDARD Missile-2, December 31, 1994

5. (U) Related Programs:

CG 47 AEGIS Cruiser, and DDG 51 AEGIS Destroyer Ship Classes, and TERRIER CG/NTU, TARTAR CGN/NTU, and Vertical Launch System.

6. (U) Mission and Description:

(U) The STANDARD Missile Medium Range (SM-2 MR) and Extended Range (SM-2 ER) are solid propellant, tail controlled surface-to-air missiles with mid-course guidance, semi-active homing guidance and home-on jam capability. The SM-2 Block I ER missile was produced in FY 76 thru FY 83. The SM-2 Block I MR missile was produced in FY 80 thru FY 83. Both missiles incorporated command guidance, inertial reference system and monopulse receiver to improve range, accuracy and electronic countermeasure (ECM) resistance over the SM-1 missile.

(U) Block II SM-2 is a variation of Block I SM-2. Block II Medium Range (MR) and Extended Range (ER) Missiles incorporate increased kinematics, new conventional warhead, improved fuzing, and improved guidance to provide enhanced capability against high flying, steep diving anti-ship missiles (ASMs). Due to the addition of a MK-104 Dual Thrust Rocket Motor, Block II MR missile range is double that of Block I MR missiles and approximates range of Block II ER missiles. The SM-2 Block II MR is deployed on TARTAR New Threat Upgrade ships and AEGIS CG-47/51 Cruisers and AEGIS DDG-51 Destroyers. The SM-2 Block II ER is deployed on all 31 TERRIER Guided Missile Cruisers and Destroyers.

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STANDARD Missile-2, December 31, 1994

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

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7. (U) Program Highlights:

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(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, and Airframe); ATI (MK 115 Warhead Case); Bendix (Target Detecting Device); ARC (MK 104 Dual Thrust Rocket Motor); and Hercules (MK 70 Booster).

(U) The SM-2 MR and ER variants are no longer in production.

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STANDARD Missile-2, December 31, 1994

7a. ~~(S)~~ Program Highlights (Cont'd):

(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.

(U) General Dynamics Air Defense Systems, Pomona, CA was acquired by Hughes Missile Systems Company (HMSC) and is in the process of moving to Tucson, AZ. This move is expected to be completed in March 1995. The Block IIIA production contract was awarded in January 1992. A Block IIIA Pre-production missile was flown successfully in January 1993 against an AEGIS Special Evaluation Test Target.

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STANDARD Missile-2, December 31, 1994

7b. ~~(S)~~ Program Highlights (Cont'd):

Lake Erie (CG 70) with 4 of 6 flights successful on 6 October 1994. COMOPTEVFOR has concluded based on the DT/IOT&E findings that the SM-2 Block IV is potentially operationally effective and potentially operationally suitable and recommended proceeding to Low Rate Initial Production (LRIP). This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --

The SM-2 Block IV ARB was held on 9 January 1995 and the program was certified to proceed to the NPDM. The second SM-2 Block IIIB Flight Test round firing is scheduled for early March.

8. (U) Threshold Breaches:

There are three schedule breaches to the SM-2 BLK I/II/III/A/B Acquisition Program Baseline (APB), dated 28 June 1994. There is a Nunn/McCurdy unit cost breach for the BLK IV which resulted from the decision to change procurement quantities from the originally planned 3,204 to a lesser quantity because of the transition to the BLK IVA after a two year LRIP. A program deviation report and baseline change request have been submitted for the SM-2 BLK I/II/III/A/B APB for schedule changes and SM-2 BLK IV APB for the Nunn-McCurdy breach as noted above.

9. (U) Schedule:

SM-2 BLK I/II/III/A/B

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
<div style="background-color: #cccccc; height: 20px; width: 100%;"></div>			
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

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STANDARD Missile-2, December 31, 1994

9a. (U) Schedule (Cont'd):
SM-2 BLK I/II/III/A/B

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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

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b. (U) Previous Change Explanations --

SM-2 BLOCK II MR/ER

FOT&E for SM-2 MR on the USS Vincennes (CG 49) slipped from November 85 to May 86 due to ship availability. Lot 3 ALP slipped from April to May 86 due to ASN Scheduling. ARB was rescheduled to October 86 and NPDM was completed in December 86 causing Milestone IIIE (AFP) to slip from December 84 to December 86.

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STANDARD Missile-2, December 31, 1994

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

SM-2 BLK I/II/III/A/B

SM-2 BLOCKS III/IIIA/IIIB

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c. (U) Current Change Explanations --

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d. (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.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 28, 1994.

SM-2 BLK IV

a. (U) Milestones --

Development Estimate	Approved Program	Current Estimate
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STANDARD Missile-2, December 31, 1994

9a. (U) Schedule (Cont'd):
SM-2 BLK IV

(U) Milestones (Cont'd) --

Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
--------------------------------	----------------------------	----------------------------

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b. (U) Previous Change Explanations --

IOC for the SM-2 Block IV slipped 24 months due to program restructuring caused by technical problems. Test delays caused by further hardware technical problems caused a slip in IOC of 13 months. Schedule for Development Test, OPEVAL, MSIII, First Production Delivery and IOC slipped due to flight test delays arising from hardware technical problems. DT, OT, MS III, First Production Delivery, and IOC again slipped due to a delay in the flight test schedules caused by further hardware technical issues.

c. (U) Current Change Explanations --

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d. (U) References --

(U) Development Estimate:

Proposed Program Management Plan dated October, 1987.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1994.

10. (U) Performance Characteristics:

SM-2 BLK I/II/III/A/B

a. (U) Performance --

PdE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
-----	---	----------------------------------	----------------------------

BLOCK II MR

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STANDARD Missile-2, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):
SM-2 BLK I/II/III/A/B

<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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STANDARD Missile-2, December 31, 1994

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

SM-2 BLK I/II/III/A/B

<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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b. (U) Previous Change Explanations --

SM-2 Block II MR/ER

Changes reflect test data results.

SM-2 Block III/IIIA/IIIB

Changes reflect test data results.

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

d. (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.

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STANDARD Missile-2, December 31, 1994

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

SM-2 BLK I/II/III/A/B

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 28, 1994.

SM-2 BLK IV

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

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b. (U) Previous Change Explanations --

Block IV missile operational characteristics updated to reflect latest reliability analyses.

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

d. (U) References --

(U) Development Estimate:

Proposed Program Management Plan dated October, 1993.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1994.

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STANDARD Missile-2, December 31, 1994

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
SM-2 BLK I/II/III/A/B

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	648.4	1084.7	762.7
Procurement	5923.2	7423.7	6214.1
AUR Hardware	(4510.5)		(4303.9)
Other Flyaway	(500.0)		(954.6)
Total Flyaway	(5010.5)		(5258.5)
Non-recurring Support	(388.9)		(471.5)
Fleet Support	(330.9)		(345.0)
Total Other Wpn Sys	(719.8)		(816.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(139.1)
Construction (MILCON)	0.0	34.0	34.2
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 84 Base-Year \$	6571.6	8542.4	7011.0
Escalation	1481.2	2182.8	1373.6
Development (RDT&E)	(53.2)	(157.8)	(71.7)
Procurement	(1428.0)	(2016.2)	(1293.3)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	8052.8	10725.2	8384.6

Note: SM-2 Block IV program is included within the figures for Approved Program.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	10778	11363	11345
Total	10778	11363	11345

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 II missiles for Japan at a cost of \$15.7M in FY92, 53 at a cost of \$40.5M in FY93, 37 in FY94 for \$25.1M, and 119 in FY96-97 for \$88.8M. Canada has committed for 65 SM-2 Block III in FY92 at a cost of \$34.3M and 10 in FY95 for \$5.8M. Taiwan has also considered procuring 100 SM-2 BLOCK III missiles.

d. (U) Nuclear Costs -- None.

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STANDARD Missile-2, December 31, 1994

11e. (U) Total Program Cost and Quantity (Cont'd):
SM-2 BLK I/II/III/A/B

e. (U) References --

(U) Production Estimate:

SM-2 Block II Milestone IIIIE NPDM of 17 December 1986. Block III Milestone IIIB NAVY ARB of 12 May 1988.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 28, 1994.

SM-2 BLK IV

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	283.9	315.7	319.8
Procurement	1914.6	2251.8	161.0
AUR Hardware	(1551.7)		(97.1)
Other Flyaway	(207.0)		(27.4)
Total Flyaway	(1758.7)		(124.5)
Fleet Support	(60.1)		(21.5)
Non-recurring Support	(66.8)		(12.3)
Total Other Wpn Sys	(126.9)		(33.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(29.0)		(2.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 84 Base-Year \$	2198.5	2567.5	480.8
Escalation	815.9	1737.6	155.1
Development (RDT&E)	(56.2)	(71.1)	(72.1)
Procurement	(759.7)	(1666.5)	(83.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	3014.4	4305.1	635.9

Note: Reflects decision to transition to production of SM-2 Block IVA after two year LRIP. LRIP quantities of 42 for first year and 64 for the second year are scheduled.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	3000	3204	106
Total	3000	3204	106

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STANDARD Missile-2, December 31, 1994

11c. (U) Total Program Cost and Quantity (Cont'd):
SM-2 BLK IV

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Proposed Program Management Plan dated October, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1994.

12. (U) Unit Cost Summary:

SM-2 BLK I/II/III/A/B

		<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program				
(1) Cost (BY84\$)	7491.8	7011.0	8542.4	
(2) Quantity		11345	11363	
(3) Unit Cost	11451	0.618	0.752	-17.797
	.654			
b. (U) Procurement				
(1) Cost (BY84\$)	6315.1	6214.1	7423.7	
(2) Quantity		11345	11363	
(3) Unit Cost	11451	0.548	0.653	-16.161
	.654			

SM-2 BLK IV

		<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program				
(1) Cost (BY84\$)		480.8	2567.5	
(2) Quantity		106	3204	
(3) Unit Cost		4.536	0.801	466.032

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STANDARD Missile-2, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

SM-2 BLK IV

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY84\$)	161.0	2251.8	
(2) Quantity	106	3204	
(3) Unit Cost	1.519	0.703	116.114

Note: Reflects decision to transition to production of SM-2 Block IVA after a two year LRIP.

	<u>Current Estimate (DEC 94 SAR)</u>	<u>UCR Baseline (FEB 94 APB)</u>	<u>Percent Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	635.9	4305.1	
(2) Unit Cost	5.999	1.344	346.470
d. (U) Procurement			
(1) Cost (TY\$)	244.0	3918.3	
(2) Unit Cost	2.302	1.223	88.226

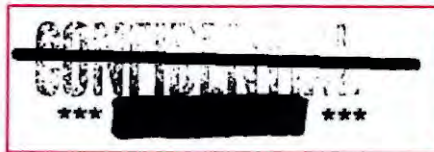
e. (U) Changes from the Baseline Report - Not Applicable

f. (U) Changes from the Previous SAR (DEC 93 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY84\$)	3.718	454.523
(2) PAUC (BY84\$)	0.800	111.266
(3) PAUC Quantity	-3098	-96.692
(4) PAUC (TY\$)	4.465	291.069
(5) AUPC (TY\$)	0.889	62.916

g. (U) Initial SAR

(1) Program Acquisition Cost (BY\$)	--	2567.5
(2) Program Acquisition Cost (TY\$)	--	4305.1



STANDARD Missile-2, December 31, 1994

12. ~~(S)~~ Unit Cost Summary (Cont'd):

SM-2 BLK IV

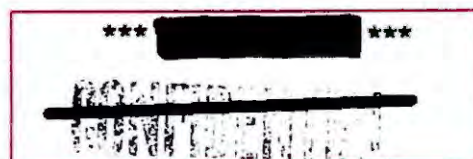
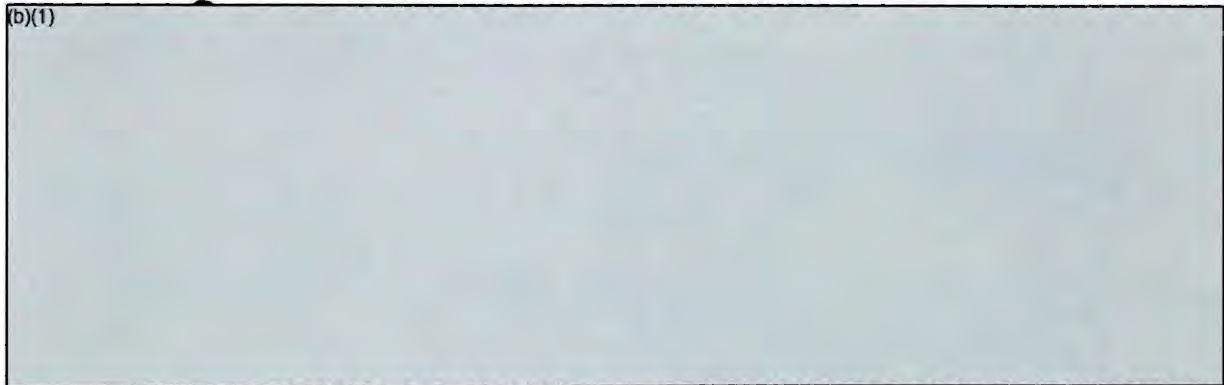
Initial SAR Costs are in millions of dollars.
The Initial SAR is dated 31 December 1992.

h. ~~(U)~~ Unit Cost Changes.

(1) (U) PAUC --

Due to a programming decision to transition production to the SM-2 Block IVA in FY97, the SM-2 Block IV will only be placed in Low Rate Initial Production (LRIP) for two years, and the years of total production have been reduced from 16 to 2. The total Block IV quantities to be procured have therefore decreased significantly, meaning the sunk costs of RDT&E are now spread out over less missiles, leading to a significant increase in unit cost.

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STANDARD Missile-2, December 31, 1994

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	-30.8	-723.0	+1.6	-752.2
Quantity	-	+178.3	-	+178.3
Schedule	-	+593.7	-	+593.7
Engineering	+5.1	+199.1	-	+204.2
Estimating	+152.7	-199.6	+41.2	-5.7
Other	-	-	-	-
Support	-	-7.3	-	-7.3
Subtotal	+127.0	+41.2	+42.8	+211.0
Current Changes:				
Economic	-0.3	-2.6	-	-2.9
Quantity	-	-13.9	-	-13.9
Schedule	-	48.2	-	+48.2
Engineering	-	-3.6	-	-3.6
Estimating	6.1	142.8	-	+148.9
Other	-	-	-	-
Support	-	-55.9	-	-55.9
Subtotal	+5.8	+115.0	-	+120.8
Total Changes	+132.8	+156.2	+42.8	+331.8
Current Estimate	834.4	7507.4	42.8	8384.6

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STANDARD Missile-2, December 31, 1994

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	-	+241.2	-	+241.2
Schedule	-	+184.8	-	+184.8
Engineering	+16.1	+158.0	-	+174.1
Estimating	+94.2	-403.0	+34.2	-274.6
Other	-	-	-	-
Support	-	+77.9	-	+77.9
Subtotal	+110.3	+258.9	+34.2	+403.4
Current Changes:				
Quantity	-	-6.1	-	-6.1
Schedule	-	-8.0	-	-8.0
Engineering	-	-3.0	-	-3.0
Estimating	4.0	84.1	-	+88.1
Other	-	-	-	-
Support	-	-35.0	-	-35.0
Subtotal	+4.0	+32.0	-	+36.0
Total Changes	+114.3	+290.9	+34.2	+439.4
Current Estimate	762.7	6214.1	34.2	7011.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Escalation Indices. Economic Adjustment for Negative Program Change.

Engineering: Increase due to decision to pursue development of SM-2 Block IIIA and SM-2 Block IV.

Estimating: Extension of the Block IIIA and Block IV programs, adjustment for current and prior inflation, reprogramming due to new requirements.

Procurement

Economic: Revised escalation indices.

Quantity: Addition of a program year as a continuing program.

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STANDARD Missile-2, December 31, 1994

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

SM-2 BLK I/II/III/A/B

Decrease of 110 BLK IIIA missiles.

Schedule: Budget changes. Increase due to program stretch-out and reduction in annual buy quantities. Shifting of missiles to outyears to procure more advanced variants.

Engineering: Introduction of early phases of low altitude improvements and improvements to the TDD, Warhead and Rocket Motor.

Estimating: Budget changes. Reduced costs due to competition for all major components in FY 88 and outyears. Increase due to changes in missile mix. Decrease due to inflation assumptions in POM 94. Increases due to continued program stretch-out. Increases due to reduction of annual buy quantities in FYDP. Increase due to changes in inflation assumptions. Correction to align Flyaway and Support.

Support: Budget changes. Adjustment to reconcile differences in previous support changes. Increase due to realignment of support due to program stretch-out.

MILCON

Economic: Revised Escalation Indices.

Estimating: Increase due to expanded facilities to meet requirements. Decrease due to revised requirements in FY 92 and 93.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.4
Increase due to change in requirements. (Estimating)	+3.7	+5.7
RDT&E Subtotal	<u>+4.0</u>	<u>+5.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-14.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+12.0

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STANDARD Missile-2, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I/II/III/A/B

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Total Variance associated with decrease of 18 units.	-17.1	-39.0
Decrease due to the decision to eliminate 18 missiles from the total quantity procured. (Quantity)	-6.1	-13.9
Engineering Variance resulting from Quantity Allocation. (Engineering)	-3.0	-3.6
Schedule Variance resulting from Quantity Allocation. (Schedule)	-8.0	-21.4
Change in annual program buy schedule. (Schedule)	--	+69.6
Adjustment for Current & Prior Inflation. (Estimating)	+3.4	+4.9
Increase due to program stretch-out. (Estimating)	+110.1	+185.4
Decrease due to Acquisition Efficiency Adjustments. (Estimating)	-9.6	-16.1
Decrease due to First Destination Adjustments. (Estimating)	-0.1	-0.2
Decrease due to Test & Test Equipment Realignment. (Estimating)	-5.4	-9.0
Decrease due to Canister Funding Deficiencies. (Estimating)	-1.4	-2.3
Decrease due to Inflation Adjustments. (Estimating)	-14.9	-23.1
Increase due to JLSC Decisions. (Estimating)	+1.6	+2.6
Decrease due to DBOF Rate Adjustments. (Estimating)	+0.4	+0.6
Adjustment for Current & Prior Inflation. (Support)	+0.8	+1.0
Increase in Initial Spares due to change in requirements. (Support)	+0.6	+0.7
Decrease in Non-Recurring Support due to change in requirements. (Support)	-24.0	-39.6
Decrease in Fleet Support due to change in requirements. (Support)	-12.4	-18.0
Procurement Subtotal	+32.0	+115.0

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STANDARD Missile-2, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
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	+1.4	+159.8	-	+161.2
Quantity	-	+428.6	-	+428.6
Schedule	-	+926.1	-	+926.1
Engineering	-	+123.0	-	+123.0
Estimating	+45.4	+136.2	-	+181.6
Other	-	-	-	-
Support	-	+80.6	-	+80.6
Subtotal	+46.8	+1854.3	-	+1901.1
Current Changes:				
Economic	-0.1	-154.9	-	-155.0
Quantity	-	-3499.7	-	-3499.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	5.1	-377.4	-	-372.3
Other	-	-	-	-
Support	-	-252.6	-	-252.6
Subtotal	+5.0	-4284.6	-	-4279.6
Total Changes	+51.8	-2430.3	-	-2378.5
Current Estimate	391.9	244.0	-	635.9

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STANDARD Missile-2, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	283.9	1914.6	0.0	2198.5
Previous Changes:				
Quantity	-	+35.6	-	+35.6
Schedule	-	+184.8	-	+184.8
Engineering	+41.2	-	-	+41.2
Estimating	-9.5	+158.0	-	+148.5
Other	-	-	-	-
Support	-	+10.7	-	+10.7
Subtotal	+31.7	+389.1	-	+420.8
Current Changes:				
Quantity	-	-1802.8	-	-1802.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.2	-209.8	-	-205.6
Other	-	-	-	-
Support	-	-130.1	-	-130.1
Subtotal	+4.2	-2142.7	-	-2138.5
Total Changes	+35.9	-1753.6	-	-1717.7
Current Estimate	319.8	161.0	-	480.8

Note: Reflects decision to transition to SM-2 Block IVA after two year LRIP.

b. (U) Previous Change Explanations --

RD&E

Economic: Revised escalation indices.

Engineering: Addition of Block IV RD&E Program.

Estimating: Decrease due to revised requirements. Decrease due to change in requirements.

Procurement

Economic: Revised escalation indices.

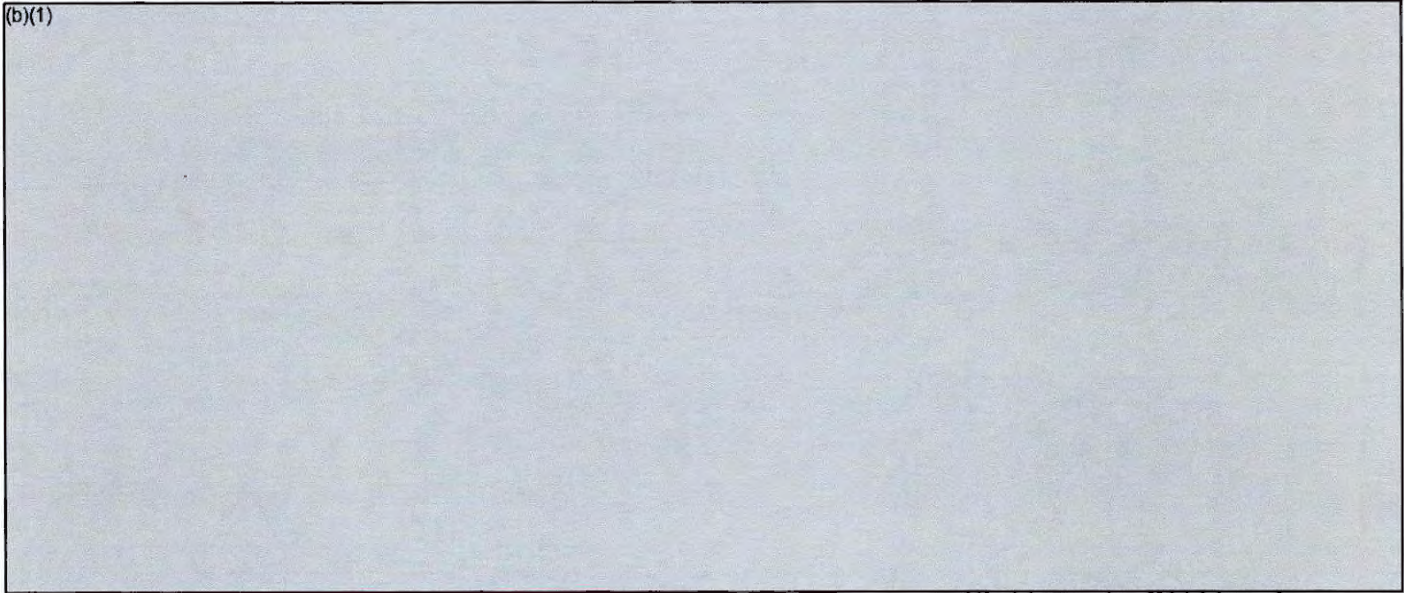
Quantity: Addition of 204 missiles to Block IV total buy.

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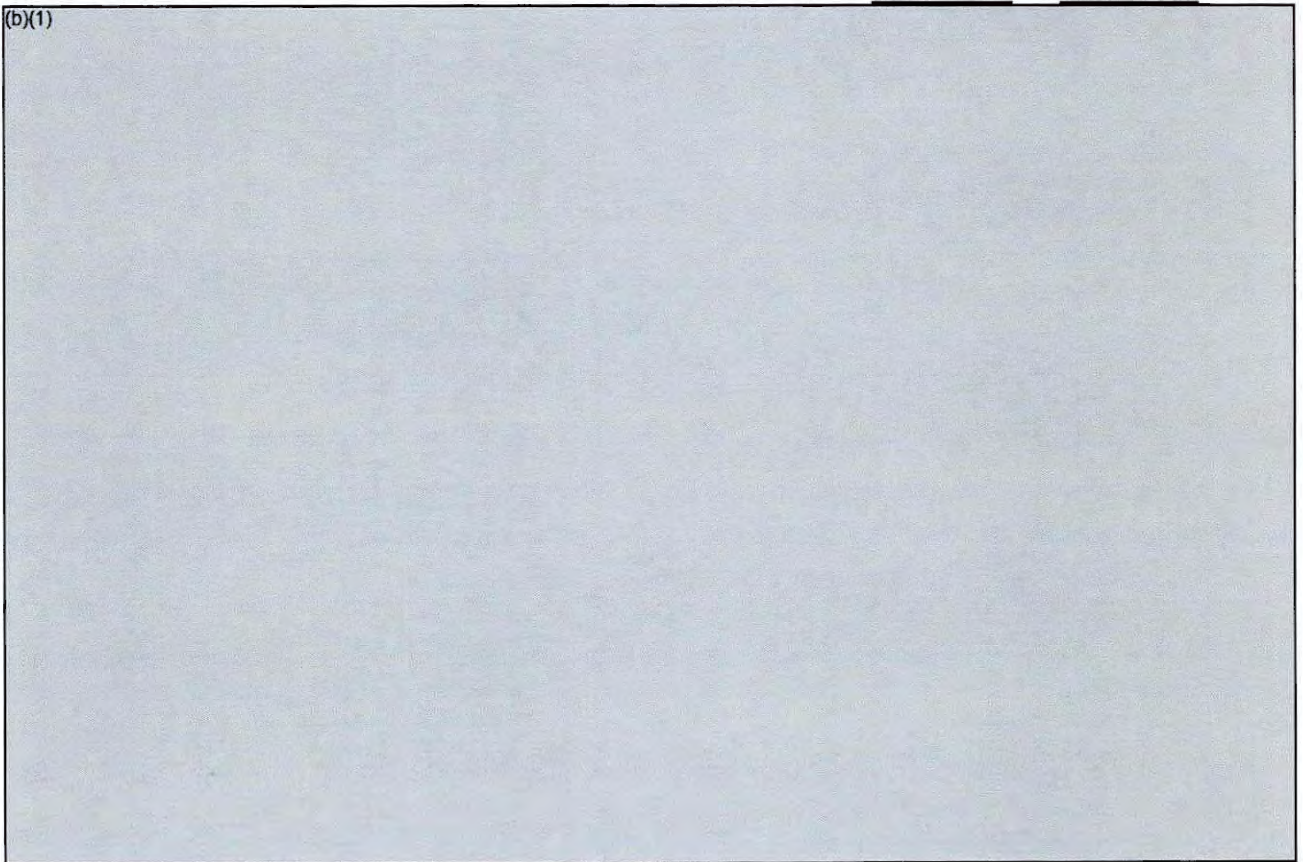
STANDARD Missile-2, December 31, 1994

(b)(1)



(Dollars in Millions)
Base-Year Then-Year

(b)(1)



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13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease due to Acquisition Efficiency Adjustments. (Estimating)	-0.2	-0.3
Decrease due to First Destination Adjustments. (Estimating)	-0.1	-0.1
Decrease due to Inflation Adjustments. (Estimating)	-3.0	-4.4
Increase due to JLSC Decisions. (Estimating)	+0.2	+0.3
Increase due to DBOF Rate Adjustments. (Estimating)	+0.3	+0.4
Adjustment for Current & Prior Inflation. (Support)	+0.1	+0.1
Decrease in Initial Spares due to decision to transition to production of SM-2 BLK IVA. (Support)	-20.7	-40.4
Decrease in Non-Recurring Support due to decision to transition to production of SM-2 BLK IVA. (Support)	-46.4	-92.0
Decrease in Fleet Support due to decision to transition to production of SM-2 BLK IVA. (Support)	-63.1	-120.3
Procurement Subtotal	<u>-2142.7</u>	<u>-4284.6</u>

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

SM-2 BLK I/II/III/A/B

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.747	-0.067	-0.023	0.057	0.018	0.013	--	-0.006	-0.008	0.739

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

SM-2 BLK IV

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.005	0.058	-1.539	8.737	1.160	-1.799	--	-1.623	4.994	5.999

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 0

Current Contract Price
Target Ceiling Qty
\$231.0 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$231.0 \$317.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

Cost and schedule variance are not required on FFP contracts.

NOTE: This is an incrementally funded contract.

(U) SM-2 BLK IIIB DEVELOPMENT:

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 0

Current Contract Price
Target Ceiling Qty
\$139.3 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$182.9 \$186.0

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-26.9	\$-6.0
Cumulative Variances To Date (10/30/94)	\$-8.6	\$-7.8
Net Change	\$18.3	\$-1.8

Explanation of Change:

Contract variance is due to technical problems with the IR Common Seeker.

b.(U) Procurement -- (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		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$170.5	N/A	693

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$170.5	N/A	693	\$170.5	\$170.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Increase in contract price to fund additional missile verification testing.

Cost and schedule variance are not required on FFP contracts.

(U) SM-2 FY91 AUR PROD: GENERAL DYNAMICS, POMONA, CA N00024-92-C-5310, FFP/PI Award: November 8, 1991 Definitized: November 8, 1991	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$118.3	N/A	372

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$118.3	N/A	372	\$118.3	\$118.3

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Increase in contract price to fund changes in anodization requirements.

Cost and schedule data are not required on FFP contracts.

(U) SM-2 FY94 AUR PROD: RAYTHEON COMPANY, BRISTOL, TN N00024-94-C-5321, FFP/PI Award: June 15, 1994 Definitized: August 22, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$44.2	\$44.2	101

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$44.2	\$44.2	101	\$44.2	\$44.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

Cost and schedule variance are not required on FFP contracts.

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

(U) SM-2 FY94 AUR PROD: HMSC, TUCSON, AZ N00024-94-C-5320, FFP/PI Award: June 15, 1994 Definitized: June 15, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$43.5	\$43.5	101

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$43.5	\$43.5	101	\$43.5	\$43.5

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

Cost and schedule variance are not required on FFP contracts.

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

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 64.5% (20 yrs/31 yrs)
- (2) Percent Program Cost Appropriated: 83.2% (\$7504.9 / \$9020.5)

SM-2 BLK I/II/III/A/B

- (1) Percent Program Completed: 64.5% (20 yrs/31 yrs)
- (2) Percent Program Cost Appropriated: 83.8% (\$7030.0 / \$8384.6)

SM-2 BLK IV

- (1) Percent Program Completed: 75.0% (9 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 74.7% (\$474.9 / \$635.9)

Note: Reflects decision to transition to SM-2 Block IVA after two year LRIP.

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

Total Program

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

Total Program					
<u>Appropriation</u>	<u>Prior Years (FY76-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	1209.6	8.6	2.0	6.1	1226.3
Procurement	6252.5	238.6	135.3	1125.0	7751.4
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7504.9	247.2	137.3	1131.1	9020.5

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

SM-2 BLK I/II/III/A/B

<u>Appropriation</u>	<u>Prior Years (FY76-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	817.7	8.6	2.0	6.1	834.4
Procurement	6169.5	108.5	117.2	1112.2	7507.4
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7030.0	117.1	119.2	1118.3	8384.6

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16b. (U) Program Funding Summary (Cont'd):
SM-2 BLK IV

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

SM-2 BLK IV

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98)</u>	<u>Total</u>
RDT&E	391.9	-	-	-	391.9
Procurement	83.0	130.1	18.1	12.8	244.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	474.9	130.1	18.1	12.8	635.9

Note: Reflects the decision to transition to production of SM-2 Block IVA after two year LRIP.

c. (U) Annual Summary -- SM-2 BLK I/II/III/A/B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblig- ated	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	61.4	60.3	2.8
1987				40.2	44.7	44.7	43.4	2.7
1988				27.3	31.4	31.4	31.4	3.0

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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 \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1989				49.6	59.5	59.5	58.9	4.2
1990				47.3	59.0	59.0	57.5	4.0
1991				37.1	48.0	48.0	47.1	4.3
1992				27.6	36.7	36.7	36.2	2.8
1993				24.2	33.0	32.4	29.4	2.7
1994				38.2	53.3	48.6	35.2	2.0
1995				11.1	16.0	0.6		2.7
1996				5.8	8.6			3.0
1997				1.3	2.0			3.0
1998				1.0	1.5			3.0
1999				0.9	1.5			3.0
2000				0.9	1.5			3.0
2001				0.9	1.6			3.0
Subtot				762.7	834.4	797.0	774.1	

Expenditures and Obligations reflect program office records as of
January 26, 1995.

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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 \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1507 Weapons Procurement, Navy

1976	22		88.0	92.4	48.4	48.4	48.4	6.6
1977								3.6
1977	36		62.2	73.9	42.9	42.8	41.4	3.8
1978	40		66.5	74.2	48.2	48.1	48.1	6.8
1979	40		57.1	66.1	47.3	47.3	47.3	8.7
1980	85		67.7	82.1	64.7	64.7	64.7	11.8
1981	345		156.2	198.2	174.3	174.3	174.3	11.6
1982	495		230.3	287.2	274.3	273.3	267.1	14.3
1983	500		294.1	399.5	403.5	403.5	392.3	9.0
1984	490		311.9	385.5	405.1	405.1	387.0	8.0
1985	730		394.4	443.5	479.7	474.3	459.0	3.4
1986	1271		589.2	659.9	738.4	738.4	733.1	2.8
1987	1194		471.3	583.2	676.2	676.2	665.3	2.7
1988	1310		414.2	472.7	569.6	568.0	561.1	3.0
1989	1310		435.7	474.7	594.4	589.8	581.0	4.2
1990	710		264.4	304.4	394.5	392.9	378.7	4.0
1991	405		185.6	228.2	303.4	299.3	279.6	4.3
1992	330		151.3	193.9	264.8	258.7	227.9	2.8

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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 \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1993	330		161.5	179.0	250.1	241.6	176.1	2.7
1994	202		123.1	153.5	220.4	183.3	55.4	2.0
1995	160		92.3	114.5	169.3	32.2	0.1	2.7
1996	87		56.1	71.3	108.5			3.0
1997	80		58.6	74.7	117.2			3.0
1998	65		44.3	58.1	93.8			3.0
1999	65		38.0	47.2	78.5			3.0
2000	72		41.3	48.2	82.6			3.0
2001	72		41.5	47.4	83.7			3.0
2002	180		72.5	80.5	146.3			3.0
2003	180		71.1	78.8	147.5			3.0
2004	180		71.9	79.4	153.2			3.0
2005	180		71.1	78.4	155.7			3.0
2006	179		75.1	83.5	170.9			3.0
Subtot	11345		5258.5	6214.1	7507.4	5962.2	5587.9	

Expenditures and Obligations reflect program office records as of
January 26, 1995.

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STANDARD Missile-2, December 31, 1994

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 \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblt- gated	Ex- pended	

Appropriation: 1205 Military Construction, Navy

1989				23.6	29.3	29.3	29.3	4.2
1990				10.6	13.5	13.5	13.5	4.0
Subtot				34.2	42.8	42.8	42.8	
Grand Total	11345		5258.5	7011.0	8384.6	6802.0	6404.8	

c. (U) Annual Summary -- SM-2 BLK IV

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblt- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1987				25.2	28.0	28.0	27.7	2.7
1988				57.7	66.4	66.4	64.1	3.0
1989				85.9	102.9	102.9	101.9	4.2
1990				72.7	90.7	90.7	83.9	4.0
1991				33.2	42.9	42.5	39.1	4.3
1992				25.6	34.1	34.1	29.3	2.8
1993				12.5	17.1	17.0	12.2	2.7

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STANDARD Missile-2, December 31, 1994

17. (U) Production Rate Data:

SM-2 BLK I/II/III/A/B

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	0/0
Procurement	9346/9256

b. (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) Deliveries (Plan/Actual) -- None.

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

No Design-to-Cost goals have been developed for the SM-2 Block IV.

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 Costs 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.

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STANDARD Missile-2, December 31, 1994

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

SM-2 BLK I/II/III/A/B

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK I/II/III Avg Annual Cost Per (b)(1)	Avg Annual Cost Per N/A
PERSONNEL	0.0	N/A
O&S CONSUMABLES	2.3	N/A
DIRECT MAINTENANCE	6.9	N/A
SUSTAINING INVENTORY	2.3	N/A
OTHER DIRECT SUPPORT	1.9	N/A
Total	13.4	N/A

(b)(1)

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	132.5	8.3	9.6	61.8	212.2
Total	132.5	8.3	9.6	61.8	212.2

SM-2 BLK IV

a. (U) Assumptions and Ground Rules --

Since the SM-2 is a wooden round, Personnel Costs 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,

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STANDARD Missile-2, December 31, 1994

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

SM-2 BLK IV

Equipment Modification, Receipt, Segregation 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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	---	---	---	1.0	1.0
Total	---	---	---	1.0	1.0

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

PROGRAM: T45TS

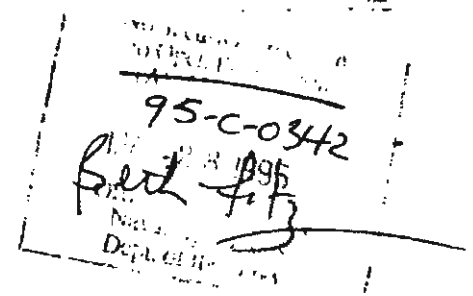
AS OF DATE: December 31, 1994

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- Designation and Nomenclature (Preferred Name):
T45TS - Undergraduate Jet Flight Training System (GOSHAWK)
- DoD Component: Navy
- Responsible Office and Telephone Number:
PEOASWASH PMA 273 CAPT WILLIAM POSNETT
ARLINGTON, VA 22243-1273 Assigned: June 18, 1993
AV 664-6211 COMM 703-604-6211

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603208N Project H1142
PROCUREMENT:
APPN 1506 ICN 0015/0016 (Navy)
MILCON:
PE PROJ 236



5. Related Programs:

PE 0603216N Navy Aircrew Common Ejection Seat (NACES)
PE 0604203N Standard Attitude and Heading Reference System
PE 0604777N Global Positioning System Inertial Navigation
Assembly

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6. Mission and Description:

The T45TS is an integrated system designed to provide undergraduate jet pilot training for prospective Navy/Marine Corps pilots and 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 Logistics Support (CLS). 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 --

Sep 84, Milestone I/II approved Full Scale Engineering Development. Acquisition Decision Memorandum (ADM) signed Nov 87 approving procurement of twelve FY 88 Pilot Production aircraft, two flight simulators, Training Integration System, academics subsystem, and integrated logistics support approved. Apr 88, first T-45A flight. Nov 88, DT/OT-IIA reveals need to incorporate wing leading edge slat, engine upgrades, other changes.

Dec 89, Defense Acquisition Board (DAB) approves continuation of pilot rate production and Acquisition Program Baseline (APB) changes. Jan 90, McDonnell Douglas Corporation (MDC) announces move of T45TS from Douglas Aircraft Company (DAC) to MDC, St. Louis. Move completed in late 90. Aug 90, MDC files claim against FSD and FY-88 Pilot Production contracts for design and production of wing slats and engine changes. Dec 90, DT/OT-IIB determines that changes have restored T-45A potential operational suitability and effectiveness.

Jun 91, Milestone IIIA DAB approves Low Rate Initial Procurement (LRIP) pending full funding of program and submission of revised APB. Dec 91, First production T-45A delivered to Naval Air Station (NAS) Kingsville, TX. All other system elements already in place. Apr 92, LRIP conditions met, revised APB approved. May 92, Digital Cockpit upgrade (Cockpit 21) development contract awarded.

Jun 92, Test aircraft mishap at Edwards AFB causes restructuring

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T45TS, December 31, 1994

7a. Program Highlights (Cont'd):

and extension of the flight test program, and an APB schedule breach. Revised Acquisition Program Baseline for schedule changes was approved in April 1993.

Sep 93, Contracting Officer issued final decision to deny McDonnell Douglas Corporation claim in entirety. Contractor appealed to the Armed Services Board of Contractor Appeals. The parties are currently engaged in an alternate dispute resolution process in an attempt to avoid protracted litigation.

Oct 93, The strike Pilot Training Rate (PTR) was reduced from 450 to 370 and 53 E-2 and C-2 aircraft PTR were added resulting in an aircraft quantity adjustment from 268 to 218. In addition, the quantity profile was restructured keeping the maximum annual production rate at 12 until 1999.

Nov 93, Full Scale Development flight test was completed. Phase 1 of a two-phased Operational Evaluation was also completed in November.

The digital cockpit upgrade for the T45TS, known as "Cockpit 21," started development. Production incorporation begins with the first FY 1995 aircraft. Milestones achieved in 1993 include: Software Preliminary Design Review, Critical Design Review, and the Software Test Readiness Review.

During 1993, a cost effectiveness assessment of qualifying, integrating and testing an alternate engine leading to possible competition with the current engine was conducted. Following a review of the required up-front investments and the potential life-cycle cost savings, the Navy has determined that proceeding with an alternate engine program is not cost effective in today's environment.

The first class of T45TS (T-45A Training System) student jet pilots began on 4 January 1994.

b. Significant Developments Since Last Report --
Alternate Dispute Resolution process for the contractor claim is continuing.

As of December 31, 1994 the Training Command had flown over 23,000 T-45A flight hours. There were a total of 109 students in training in seventeen classes. The first T45TS trained aviators received their "Wings of Gold" on 5 October 1994.

Operational Evaluation (OPEVAL) was completed 8 April 1994. The

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7b. Program Highlights (Cont'd):

T45TS was determined to be operationally effective and operationally suitable. Approval for fleet introduction was recommended.

The second Accelerated Simulated Mission Endurance Test (ASMET) was completed in March 1994. Cracks developed in the Low Pressure Nozzle Guide Vanes (LPNGV) resulting in failure of that component to meet endurance requirements. Issue is durability for the LPNGV. Root cause was identified as inadequate LPNGV cooling design and burning in the turbine. Solution includes improved LPNGV cooling scheme, fuel nozzle improvements and LPNGV material change. The contractor has signed a contractual commitment to cover costs associated with fixing the engine durability problem and support costs to include:

- Redesign and qualification of CFE/GFE engine to meet 1,000 hour service life
- Interim support to include inspections (500 hour), increased spares and manpower
- Retrofit

In October 1994 holes were discovered in the leading edge of three High Pressure Nozzle Guide Vanes (HPNGV) during the second lead-the-fleet 500 hour engine interface inspection. This component has a durability requirement of 1,000 hours. A power plant bulletin has been released identifying required engine inspections. An HPNGV inspection has been added to the existing 500 hour LPNGV inspection. The HPNGV recovery plan has been established with root cause identification in March 1995. The contractor has verbally agreed to cover only labor costs associated with HPNGV inspections.

Milestone III Acquisition Review Board (ARB) was conducted on 28 September 1994. OSD Milestone III Documentation Review began 12 October 1994. Final documentation was submitted to OSD 1 November 1994. Milestone III NPDM was completed 20 December 1994 and the Conventional System Conference (CSC) Review was completed 22 December 1994.

Cockpit 21 is in its final phase of test and evaluation. Authority to proceed with the incorporation of the engineering change proposal originally planned for October 1994 has been delayed due to problems with software integration experienced during flight test. Although delayed to May 1995, the new date for the authority to proceed with the engineering change proposal should not cause a delay in delivery of the first FY95 aircraft, originally planned for first quarter FY97. Milestone achieved in 1994 was the commencement of flight test in March 1994.

Based on a review of base loading, utilization rates, and pilot

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T45TS, December 31, 1994

7b. Program Highlights (Cont'd):

training requirements (including removal of FMS requirements), the total number of T-45A aircraft to be procured was established to be 174. This was incorporated into the budget and the Acquisition Program Baseline (APB).

The T45TS is expected to satisfy mission requirements.

c. Changes Since As Of Date --
Milestone III approved 17 January 1995.

8. Threshold Breaches: None.

9. Schedule:

a. Milestones --

	<u>Planning</u> <u>Estimate</u>	<u>Approved</u> <u>Program/PdE</u>	<u>Current</u> <u>Estimate</u>
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
Complete OPEVAL	JUN 90	DEC 93	APR 94(Ch-1)
Initial Operational Capability	MAY 91	NOV 92	APR 93
Milestone III Authorized Full Production	N/A	JAN 95	JAN 95(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

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9b. Schedule (Cont'd):

test schedule allowing for correction of the DT/OT IIA deficiencies; time required to design, test and produce the slatted wing configuration; restructuring of the program production quantities through the budget process, and the aircraft mishap. These adjustments have been incorporated in and approved through three revisions to the Acquisition Program Baseline and were reported in previous SARs. In addition, TECHEVAL, OPEVAL, MS III, AND IOC dates were adjusted to accommodate expanded scope for brakes, high angle of attack, and engine operability testing.

One month change to OPEVAL end date (from Feb 94 to Mar 94) resulted primarily from time required to complete high angle of attack testing at Edwards AFB. Milestone III adjusted accordingly (from Aug 94 to Sep 94) to allow for receipt and consideration of OPEVAL report in Defense Acquisition Board preparation process.

c. Current Change Explanations --

(CH-1) The current estimate of Complete OPEVAL changed from March 94 to April 94 because the completion of OPEVAL occurred on 8 April 1994.

MS III was approved on 19 January 1995. The change from September 94 to January 95 was due to the coordination and resolution of technical issues.

d. References --

Planning Estimate:

Draft SCP of January, 1984.

Approved Program;PdE:

DAB Approved Acquisition Program Baseline dated January 19, 1995.

10. Performance Characteristics:

a. Performance --	<u>PE</u>	<u>Approved Program;PdE</u>		<u>Demon-</u> <u>strated:</u>	<u>Current</u>
		<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>
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	13868	13868
Specific Range @ 30,000 ft (takeoff less 40% useable fuel) (nm/lb)	N/A	.33	/ .32	.359	.359

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10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program;PdE Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Endurance @ 5000 ft (takeoff less 80% useable fuel) (lb/hr)	N/A	1130 / 1160	940	940
Waveoff (altitude loss ft)	N/A	50 / 70	<70	<70
Bolter (ground roll distance ft @ 15 kts WOD)	N/A	325 / 425	310-375	310-375
Lateral Directional Stability (sideslip excursion approach configuration)(deg)	N/A	4 / 6	6	6
Roll Off at Stall (approach configuration) (deg)	N/A	<30 / 30	15-20	15-20
"G" Excursion Speed Brake Extension (Gs)	N/A	.25 / .40	.35	.35
Longitudinal Stability (stick free damping ratio 10,000 ft & .86 IMN)	N/A	.45 / .25	.30	.30
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

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10a. Performance Characteristics (Cont'd):

	PE	Approved Program;PdE Objective/Threshold		Demon- strated Perf	Current Estimate	
Training Integration						
System						
Memory (RAM) (MB)	N/A	256	/ 192	192	192	
I/Os per second	N/A	210	/ 75	75	75	
Terminal Response Time (sec avg)	N/A	<3	/ 3	<3	<3	
Aircraft						
Speed						
Max Level Flt (Mach)	.80	.84	/ .83	.845	.845	
Approach (kts)	155-125	125	/ 125	124.4	124.4	
Sustain G's @ 15,000 ft	3.0	3.4	/ 3.2	3.3	3.3	
Mean Flight Hours Between Failure (MFHBF)	3.2	3.2	/ 2.0	3.2	3.2	
Direct Maintenance Man Hours/Flight Hour (DMMH/FH)	10.0	10	/ 10	8.33	8.33	
Availability (%)	85	85	/ 75	76	76	
Simulator						
Availability (%)						
Instrument Flight Trainer (IFT)	96	95	/ 80	90	90	
Operational Flight Trainer (OFT)	95	95	/ 80	90	90	
Academics						
Computer Aided Instruction (CAI) System Availability (% Sched)	98	95	/ 85	100	100	
Training Integration						
System (TIS)						
Availability (% Sched)	N/A	95	/ 85	85	100	
Pilot Training Rate	600	N/A	/ N/A	N/A	N/A	(Ch-1)
Utilization Rate (Hr/Yr)	720	N/A	/ N/A	N/A	N/A	
Max Range	1000	N/A	/ N/A	N/A	N/A	
Wing Area	179.64	N/A	/ N/A	N/A	N/A	

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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.

Estimates were updated to reflect final test data. PTR reduced from 450 to 423 to reflect declining force structure and increased requirement for E-2 and C-2 aircraft pilot training.

c. Current Change Explanations --

(CH-1) Due to the nature of this element, the current estimate is not provided as they are not tracked or measured.

d. References --

Planning Estimate:

Draft SCP of January, 1984.

Approved Program/PdE:

DAE Approved Acquisition Program Baseline dated January 19, 1995.

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

a. Cost --	Planning <u>Estimate</u>	Approved <u>Program/PdE</u>	Current <u>Estimate</u>
Development (RDT&E)	1616.7	898.9	874.2
Procurement	3660.0	4595.2	4565.2
Airframe/CFE	(1769.5)		(2555.6)
Engine/Accessories	(511.0)		(183.8)
Electronics CFE/GFE	(192.0)		(214.4)
Change Allowance/ECO	(60.3)		(62.6)
Other GFE	(24.9)		(107.8)
Nonrecurring flyaway	(49.7)		(188.2)
Ancillary Equipment			(10.4)
Total Flyaway	(2607.4)		(3322.8)
Other Wpn Sys Cost	(811.6)		(623.9)
Peculiar Support	(0.0)		(337.1)
Initial Spares	(241.0)		(281.4)
Construction (MILCON)	0.0	0.0	34.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 95 Base-Year \$	5276.7	5494.1	5473.4
Escalation	185.3	105.4	79.3
Development (RDT&E)	(-273.8)	(-167.1)	(-162.0)
Procurement	(459.1)	(241.4)	(244.2)
Construction (MILCON)	(0.0)	(31.1)	(-2.9)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	5462.0	5599.5	5552.7

Peculiar support for the T45TS includes the simulators, the Training Integration System and the Academics.

The SAR baseline has been converted from FY 84 base year dollars to FY 95 base year dollars after MS III approval of new cost estimate in FY 95 base year dollars using the following factors:

RDTE - 1.4055
APN - 1.405388
MILCON - 1.4055

b. Quantity --			
Development (RDT&E)	4	2	2
Procurement	<u>300</u>	<u>174</u>	<u>174</u>
Total	304	176	176

Quantity approved at the first LRIP (FY 88) was 12 aircraft, the second LRIP (FY 89) was 24 aircraft, subsequent LRIPs (FY 92, FY 93 and FY 94) were 12 aircraft each. Milestone III approved full rate production beginning with FY95.

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

The T-45A aircraft was selected as a derivative of the existing British HAWK aircraft which was in operation in numerous countries throughout the world. From conception, the T-45A aircraft was assessed as a "low-risk" derivative development, converting the proven land-based jet trainer to a carrier capable trainer. For these reasons, the Navy's original strategy (concurrent development and production) always planned for 20% of the total procurement of 300 aircraft as LRIP.

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

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

Draft SCP of January, 1984.

Approved Program/PdE:

DAE Approved Acquisition Program Baseline dated January 19, 1995.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY95\$)	5473.4	5494.1	
(2) Quantity	176	176	
(3) Unit Cost	31.099	31.216	-0.377
b. Procurement			
(1) Cost (BY95\$)	4565.2	4595.2	
(2) Quantity	174	174	
(3) Unit Cost	26.237	26.409	-0.653

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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	-23.7	-385.6	-1.9	-411.2
Quantity	-23.8	-966.8	-	-990.6
Schedule	-619.6	+724.6	-	+105.0
Engineering	+121.8	+764.5	-	+886.3
Estimating	+48.0	+737.5	+33.0	+818.5
Other	-	-	-	-
Support	-103.7	+214.6	-	+110.9
Subtotal	-601.0	+1088.8	+31.1	+518.9
Current Changes:				
Economic	3.6	177.4	-	+181.0
Quantity	-	-593.9	-	-593.9
Schedule	-	-28.1	-	-28.1
Engineering	-19.4	-123.1	-	-142.5
Estimating	-13.9	76.4	-	+62.5
Other	-	-	-	-
Support	-	92.8	-	+92.8
Subtotal	-29.7	-398.5	-	-428.2
Total Changes	-630.7	+690.3	+31.1	+90.7
Current Estimate	712.2	4809.4	31.1	5552.7

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T45TS, December 31, 1994

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

a. Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1616.7	3660.0	0.0	5276.7
Previous Changes:				
Quantity	-34.7	-431.9	-	-466.6
Schedule	-699.1	+163.7	-	-535.4
Engineering	+110.2	+672.1	-	+782.3
Estimating	+60.7	+695.2	+34.0	+789.9
Other	-	-	-	-
Support	-151.8	+105.8	-	-46.0
Subtotal	-714.7	+1204.9	+34.0	+524.2
Current Changes:				
Quantity	-	-366.5	-	-366.5
Schedule	-	17.8	-	+17.8
Engineering	-20.3	-103.2	-	-123.5
Estimating	-7.5	68.2	-	+60.7
Other	-	-	-	-
Support	-	84.0	-	+84.0
Subtotal	-27.8	-299.7	-	-327.5
Total Changes	-742.5	+905.2	+34.0	+196.7
Current Estimate	874.2	4565.2	34.0	5473.4

Note: The SAR baseline has been converted from FY 84 to FY 95 base year dollars after the MS III approval of a new cost estimate in FY 95 base year dollars. Previous changes have been adjusted accordingly.

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.

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

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 account. Addition of FY 93 Congressional increase for alternate engine exploration. Outyear flight envelope expansion and Naval Air Training Operational Procedures Standardization verification.

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. Addition of FY 93 funding. Reductions to budget controls resulting in decreased Navy-In-House support.

Support: Reduced manpower and material to support a two vice a four flight test article program and use of a Training Integration System 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 quantities due to reduced Pilot Training Rate (PTR).

Schedule: Revised aircraft procurement schedule and allocations due to quantity decrease.

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 nonrecurring to RDT&E account. Allocations due to quantity decrease.

Estimating: Changes in dollar/pound exchange rate, addition of Standard Attitude Heading Reference System as GFE. Move of program from Long Beach, CA to St. Louis, MO, updated contractor rates, engine breakout to GFE, Congressionally directed transfer and actual negotiated contract values.

Support: Revised estimate of ILS requirements, inclusion of depot capability and revised simulator quantities.

T45TS, December 31, 1994

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

MILCON

Economic: Revised escalation indices.

Estimating: Revised estimate of T45TS system specific MILCON.
Revised to reflect force structure issues. Updated
to reflect change in base year dollars from FY 84
to FY 95 base year.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	--	+3.6
Elimination of alternate engine exploration from FY 93. (Engineering)	-20.3	-19.4
Adjustments to budget controls. (Estimating)	-7.5	-13.9
RDTE Subtotal	<u>-27.8</u>	<u>-29.7</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	--	-28.3
Economic adjustment for negative program change. (Economic)	--	+205.7
Decreased quantities (218 TO 174) due to reduced PTR. (Quantity)	-601.5	-768.5
Allocation to quantity due to quantity decrease. (Quantity)	+235.0	+174.6
Allocation to schedule due to quantity decrease. (Schedule)	-25.1	-112.8
Allocation to engineering due to quantity decrease. (Engineering)	-103.2	-123.1
Allocation to estimating due to quantity decrease. (Estimating)	-106.7	-144.4
Revised aircraft procurement schedule. (Schedule)	+42.9	+84.7
Revised estimates to reflect actual cost data and MS III CAIG review. (Estimating)	+174.9	+220.8
Revised estimate of ILS requirements. (Support)	+84.0	+92.8
Procurement Subtotal	<u>-299.7</u>	<u>-398.5</u>

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

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
17.967	-1.308	4.064	0.437	4.226	5.006	--	1.157	13.582	31.549

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

a. RDT&E --

COCKPIT 21:
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO
N00019-92-C-0069, CPIF
Award: May 29, 1992
Definitized: March 31, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$71.0	\$73.3	1

Current Contract Price		
Target	Ceiling	Qty
\$61.7	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$56.2	\$56.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$2.0	\$-0.7
Cumulative Variances To Date (12/31/94)	\$0.5	\$-2.1
Net Change	\$-1.5	\$-1.4

Explanation of Change:

The initial contract price reflected estimates prior to Letter Contract definitization. The current contract price reflects the definitized contract value. As this is a cost reimbursable contract the reporting of a ceiling value is not appropriate.

Although cost and schedule variances are still nominal they are beginning to show adverse trends. Cost variance, although positive, is declining and schedule variance continues to increase. The last major task on this contract, completion of DT/OT testing, continues to lag behind schedule and associated costs are increasing.

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15. Contract Information (Cont'd):

b. Procurement --

T45TS FY 92 PRODUCTION:
MCDONNELL DOUGLAS CORP, ST LOUIS, MO
N00019-90-C-0040, FFP
Award: April 1, 1991
Definitized: June 10, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$350.6	N/A	12

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$359.1	N/A	12	\$359.1	\$359.1

Explanation of Change:

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

Total contract (aircraft and support) was definitized in June 1994 for \$350.6M and is reflected in initial contract price. Change to current contract price is due to definintization of support equipment.

T45TS FY 93 PRODUCTION:
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO
N00019-92-C-0187, FFP
Award: December 31, 1992
Definitized: June 10, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$228.8	N/A	12

Current Contract Price			Estimated Price At Completion...	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$246.4	N/A	12	\$246.4	\$246.4

Explanation of Change:

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

Total contract (aircraft and support) was definitized in June 1994 for \$228.8M and is reflected in initial contract price. Change to current contract price is due to funding of spares.

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15. Contract Information (Cont'd):

<u>T45TS FY 94 PRODUCTION:</u>			<u>Initial Contract Price</u>		
<u>MCDONNELL DOUGLAS CORP, ST. LOUIS, MO</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-93-C-0098, PFP	\$247.1	N/A	12		
Award: May 28, 1993					
Definitized: December 15, 1994					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$247.1	N/A	12	\$247.1	\$247.1

Explanation of Change:

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

FY 94 Production contract was definitized in December 1994.

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

a. Program Status --

- (1) Percent Program Completed: 64.0% (16 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 55.8% (\$3100.7 / \$5552.7)

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

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	711.2	0.5	0.5	-	712.2
Procurement	2358.4	341.0	369.0	1741.0	4809.4
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	3100.7	341.5	369.5	1741.0	5552.7

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T45TS, December 31, 1994

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

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1980			7.2	7.2	4.2	4.2	4.2	10.6
1981			2.5	2.5	1.6	1.6	1.6	10.6
1982			7.3	7.3	4.9	4.9	4.9	7.6
1983			11.6	11.6	7.8	7.8	7.8	4.9
1984			32.6	32.6	23.6	23.6	23.6	3.8
1985			90.3	90.3	67.5	67.5	67.5	3.4
1986			157.9	157.9	121.4	121.4	121.4	2.8
1987			179.8	179.8	142.4	142.4	142.4	2.7
1988			121.5	121.5	99.4	99.4	99.4	3.0
1989			106.8	106.8	91.1	91.1	91.1	4.2
1990			29.7	29.7	26.4	26.4	26.4	4.0
1991			16.0	16.0	14.7	14.4	14.2	4.3
1992			50.7	50.7	48.0	48.0	45.0	2.8
1993			30.6	30.6	29.7	29.7	17.6	2.7
1994			28.4	28.4	28.2	20.5	10.8	2.5
1995			0.3	0.3	0.3	0.2		2.8
1996			0.5	0.5	0.5			2.9

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T45TS, December 31, 1994

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1997			0.5	0.5	0.5			3.0
1998								3.0
1999								3.0
2000								
2001								
2002								
Subtot	2		874.2	874.2	712.2	703.1	677.9	

Appropriation: 1506 Aircraft Procurement, Navy

1987				79.4	65.1	65.1	65.1	2.7
1988	12	56.3	261.6	470.8	402.7	402.7	402.7	3.0
1989	24	9.2	442.0	423.1	376.4	376.4	371.0	4.2
1990		15.5		138.5	127.5	127.5	125.7	4.0
1991		37.1		160.6	152.2	152.2	152.2	4.3
1992	12	29.4	228.1	376.4	365.5	365.3	287.6	2.8
1993	12	7.9	227.1	284.3	282.4	277.0	125.4	2.7
1994	12	8.2	218.8	308.9	315.3	226.7	20.3	2.5
1995	12	3.1	217.7	258.2	271.3	9.5	0.1	2.8

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

1996	12	6.4	212.7	315.0	341.0			2.9
1997	12	1.4	208.5	331.0	369.0			3.0
1998	12	1.7	205.6	275.5	316.4			3.0
1999	12	1.1	203.2	270.9	320.4			3.0
2000	12		200.7	270.8	329.9			3.0
2001	12		198.4	254.2	319.0			3.0
2002	12		200.4	212.8	275.0			3.0
2003	6		99.4	113.4	151.0			3.0
2004		21.3		21.4	29.3			
Subtot	174	198.6	3124.2	4565.2	4809.4	2002.4	1550.1	

FY 94 APN was on deferral through Dec 93, therefore, no obligation/expenditure data.

Appropriation: 1205 Military Construction, Navy

1988				10.8	9.2	9.2		3.0
1989								4.2
1990				13.0	11.8	11.8		4.0
1991								4.3

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rac		Program	Obliga- ted	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1992								2.8
1993				10.2	10.1	10.1		2.7
Subtot				34.0	31.1	31.1		
Grand Total	176	198.6	3998.4	5473.4	5552.7	2736.6	2228.0	

MILCON claimant is Chief of Naval Education and Training (CNET).

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

	<u>To Date</u>
RDT&E	2/2
Procurement	49/48

b. 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 was specifically scoped to a 306 pilot training rate (PTR) per year, spread over two sites (NAS Meridian, and NAS Kingsville, TX). In order to meet this PTR, 101 aircraft are required to fly approximately 713.5 flight hours each per year. The steady state quantity of flight hours is 72059. These quantities reflect the incorporation of JPATS into the T45TS program, and were used in the calculation of Mission Personnel, Unit-Level Consumption, Contractor

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

Logistics Support, Sustaining Support and Indirect Support. In section b costs, Mission Personnel costs include the costs for pay and allowances for enlisted personnel and officers. Contractor personnel involved in the maintenance of the T-45 are not included in the element, but within the CLS portion of the O&S.

Unit-Level Consumption costs include the cost for Petroleum, Oil & Lubricants (POL) required for peacetime operations, and Training Ordnance costs. The 36 PTR for E2/C2 aircraft have no ordnance requirements, and therefore are not included in the estimate. Consumables/Repair Part and Depot Level Repairables are not included in Unit-Level Consumption, but within CLS, as maintenance is performed by the contractor.

Contractor Logistics Support costs include the costs for Aircraft Maintenance; Ground Training System (GTS Maintenance, Replenishment Spares, ROR, Simulator Maintenance, and Operations Costs); Training Spt Center Maintenance; Program & Administrative Mgt; Off Site Repair (Engine Depot ROR, Aircraft ROR, SE ROR, and Airframe Rework); Detachment Support; Travel & Per Diem; and other Direct Charges. Sustaining Support Costs include the costs for Modifications kits needed to achieve acceptable levels of safety, overcome mission capability deficiencies, and reliability, and reduce maintenance costs. Support Equipment Replacement is performed by the contractor, and is included in CLS under ROR. Sustaining Engineering Support, Software Maintenance, and Simulator Operations costs are also included in the cost for CLS.

Indirect costs include the costs for Student Aviators and Installation Support. Installation Support includes costs for personnel normally assigned to the host installation who are required for the unit to perform its mission in peacetime.

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

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per T-45/YEAR	Avg Annual Cost Per Steady State
PERSONNEL	107.3	18.4
O&S CONSUMABLES	159.3	27.2
DIRECT DEPOT MAINTENANCE	112.5	19.2
SUSTAINING INVESTMENT	86.3	14.8
OTHER DIRECT COSTS	566.8	96.9
Total	1032.2	176.5

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

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&MN	9.2	7.7	7.7	---	24.6
Total	9.2	7.7	7.7	---	24.6

This data is derived from the OP-18 Exhibit (Summary of Contractor Support Services by Categories).

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A-4 ASAS

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

AS OF DATE: December 31, 1994

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**AS AMENDED
CLEARED**

FOR OPEN PRODUCTION

1. (U) Designation and Nomenclature (Preferred Name):
All Source Analysis System (ASAS)

2. (U) DoD Component: Army

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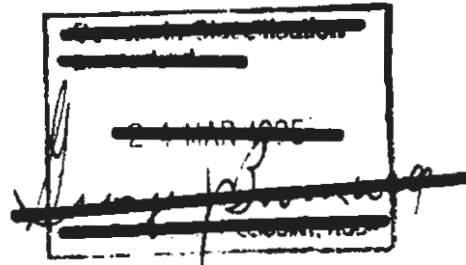
3. (U) Responsible Office and Telephone Number:

Project Manager, Intelligence Fusion COL Richard W. Johnson
ATTN: SFAE-CC-INT Assigned: October 7, 1994
1616 Anderson Drive AV 356-8110 COMM (703) 285-8110
McLean, VA 22102-5099

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

RDT&E:

PE 64321 (Shared) D396
Project D926, DB19, DB20, D2FT
PE 64321F



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95-0827

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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
APPN 2035 ICN MA9704 (Army)
APPN 2035 ICN BS9704 (Army)

5. (U) Related Programs:

Army Tactical Command and Control Systems (ATCCS), which include: 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). Joint Prototyping/Technology Insertion Office (JP/TIO, which includes WARRIOR and Warlord), Tactical Simulation (TACSIM), Joint Collection Management Tools (JCMT, which includes Collection Management Support Tools (CMST)), Joint Deployable Intelligence Support System (JDISS), Standard Integrated Command Post Shelters (SICPS), Commander's Tactical Terminal - Hybrid Receive Only (CTT-HR), Integrated Meteorological System (IMETS), Digital Topographical Support System (DTSS), Battle Command Battle Laboratory (BCBL) Huachuca, and Single Source Processor-Signals Intelligence (SSP-S).

6. (U) Mission and Description:

As the Intelligence and Electronic Warfare (IEW) sub-system of the ATCCS, 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 tactically 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, supporting contingency and crisis operations during low, mid, and high intensity wartime, and during restoration and return to peace stabilization periods. 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, 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 FY91 to include Hawkeye, an OSD-sponsored balanced technology initiative. Because of the restructuring, Block I will

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

now be fielded to the above units in the FY93-95 timeframe without having had to go into full rate production.

Block I is made up of the Communications Control Set AN/TYQ-40 which receives and transmits information from multiple sensor systems; the Data Processor Set AN/TYQ-36 which processes intelligence data; the Workstation, Computer Graphics AN/TYQ-37 which is the primary user interface with the system; and Workstation, Computer Graphics AN/TYQ-52(V) which processes intelligence data.

Block II begins production in FY98. It is made up of objective hardware modules using ATCCS Common Hardware/Software (CHS) components. ASAS Block II will begin fielding to the Army's force structure in FY00. ASAS Block III is a software development effort which will bring ASAS to its objective capabilities. It will be used with the hardware procured in Block II. There is no Block I antecedent system. ASAS Block II replaces ASAS Block I equipment with improved functionality and common hardware and software. The ASAS acquisition strategy maximizes the use of government and commercial Non-Developmental Item software, reuse of proven OSD and Army Common Operating Environment/Joint Common Operating Environment (ACOE/JCOE) software, incremental phased deliveries, and continuous user test and evaluation.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
ASAS was to be 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 Interface Module (AIM) Brassboard (ABB) which provided a near-real-time processing capability. The System Readiness and Verification Test for the ASAS AIM and the Forward Sensor Interface Control (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 Configuration (LCC). The procurement contract was let in March 1987 for production of LCC's. In November 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

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7a. (U) Program Highlights (Cont'd):

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. In April 1990 the Air Force withdrew from the Joint Tactical Fusion Program Office (JTFPO). In support of Operational 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 Ft Hood, TX. Portable ASAS Workstations were deployed to Southeast Asia to conduct intelligence operations for terrain support subsystems, and to run the Rapid Air Defense Evaluations Systems in air defense brigades to place and sight PATRIOT missiles. In May 1991 the JTFPO was disestablished by DA General Order 11. The Army placed ASAS under the Program Executive Office for Command and Control Systems. On 4 December 1991, the C3I Committee approved release of the RFP for the Block II contract for conversion to ATCCS hardware/software. The ASAS software was accredited by the Defense Intelligence Agency. On 19 December 1991, the ASAS Acquisition Program Baseline, Test and Evaluation Master Plan, Acquisition Strategy Report were approved by the Defense Acquisition Executive. On 17 January 1992, the Request for Proposal for the ASAS Block II Engineering and Manufacturing Development (E&MD) contract was released. ASAS Block I IOT&E was conducted 8 Sep-11 Oct 1992.

In 1993, three units received ASAS Block I equipment and training. Operational Effectiveness was successfully demonstrated at the Technical Test and Operational Demonstration in May-Apr 1993. ASAS received DIA accreditation for operational use world-wide in March 1993. First Unit Equipped (FUE) was the 82nd Airborne Division. In July 1993, the Army Systems Acquisition Review Council (ASARC) approved the ASAS to proceed to the Defense Acquisition Board (DAB) for a Milestone II decision for ASAS Block II. ASAS was granted Type Classification Limited Procurement for Block I. In October 1993, a "paper" DAB approved MSII for ASAS Block II and an Acquisition Decision Memorandum dated 21 October 1993 approved entering E&MD for Block II. ASAS Block II contract was awarded to Martin Marietta on 29 October 1993. Based on the ASAS Block I System being over 90% expended and 100% delivered, it is anticipated that this will be the last SAR in which Block I will be reported.

b. (U) Significant Developments Since Last Report --
On 28 March 1994, the Vice Chief of Staff, Army (VCSA) approved the ASAS-Extended concept that would field an ASAS Capability to the remainder of the force by using proven ASAS software on commercial hardware. ASAS-Extended is a commercial variant of the ASAS. It is a non-developmental item (NDI) suite of commercial hardware running

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7b. (U) Program Highlights (Cont'd):

standard ASAS software. ASAS Extended allows fielding the entire force earlier than planned. The ASAS-Extended completed a successful Army Experimentation Test at Ft. Lewis, WA, during Feb-Mar 94. ASAS-Extended has been delivered to I Corps and the 500th MI and 501st MI Brigades.

A successful Block I IOT&E II was conducted during Aug-Sept 94. As a result of this IOT&E, Operational Evaluation Command (OEC) found ASAS to be operationally effective and suitable for its intended use. Fielding of Block I was completed to the V and XVIII Corps, 1st AD, 3rd ID, 82nd ABN, 101st ASSLT, and 2nd ID.

In June 1994, the Project Manager ASAS was redesignated PM Intelligence Fusion.

Based on the ASAS Block I systems being over 90% expended and 100% fielded, it is anticipated that this will be the final SAR reporting for Block I.

The ASAS system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

ASAS Block I fielding to the 24th ID was completed in March 1995. This completed fielding of the twelve ASAS Block I systems.

8. (U) Threshold Breaches:

Block I

There are currently no breaches to the approved Acquisition Program Baseline (APB) dated 21 Oct 93, or Nunn-McCurdy unit cost breaches.

Block II/III

There are currently schedule breaches to the approved Acquisition Program Baseline (APB) dated 21 Oct 93. Both a Program Deviation Report and a revised Acquisition Program Baseline (APB) are being prepared. There are currently no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

BLOCK I

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
ASAS Acquisition Strategy	NOV 82	N/A	NOV 82
OSD/Congressional Approval of Acquisition Strategy	FEB 83	N/A	FEB 83

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9a. (U) Schedule (Cont'd):
BLOCK I

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	N/A	MAR 83	MAR 83
Implementing Contractor Award	MAR 83	N/A	MAR 83
Functional Capabilities Document Complete	DEC 83	N/A	DEC 83
Preliminary Design Review			
Architecture	FEB 84	FEB 84	FEB 84
Development	NOV 85	NOV 85	NOV 85
Joint Oversight Group Meeting (ASARC/ ASARC Authority)	MAR 84	MAR 84	MAR 84
Request for Proposals	MAY 84	N/A	MAY 84
JTFP Letter of Instruction	JUL 84	N/A	JUL 84
Award System Baseline Contract (Development)	DEC 84	DEC 84	DEC 84
ABB Testing	AUG 85	N/A	AUG 85
AIM/FSIC Testing	JUL 86	N/A	JUL 86
Directed Procurement Approval - Limited Capability Configuration	N/A	SEP 86	SEP 86
IDP	NOV 87	N/A	NOV 87
C3I Defense Acquisition Board Briefing	N/A	MAR 88	MAR 88
Software Release 1	NOV 87	N/A	APR 89
Version 2.3 Software Summary PDR	N/A	SEP 89	SEP 89
FDT&E	N/A	DEC 89	DEC 89
Light Contingency Configuration Phase 2	N/A	MAR 90	MAR 90
Production Start			
Version 2.0 Software Critical Design Review	N/A	APR 90	APR 90
Software Release 2	SEP 88	N/A	MAY 91
Software Release 3	NOV 88	N/A	N/A
First LCC Phase II Delivery to Ft. Hood	N/A	JUN 91	JUN 91
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	JUL 93	JUN 93

ACRONYM LIST:

AIM - ASAS Interface Module.
ABB - AIM Brassboard.
FSIC - Forward Sensor Interface and Control.
LCC - Limited Capability Configuration.
IDP - Intelligence Data Processor

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9b. (U) Schedule (Cont'd):
BLOCK I

b. (U) Previous Change Explanations --

The ASAS Block I/Block II ASARCs have been combined to an ASAS ASARC. 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 approved 21 Oct 93.

c. (U) Current Change Explanations -- None.

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 (JTFF) Special Task Force (STF), 5 July 1984.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

BLOCK II/III

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Joint Oversight Group (ASARC Authority Approves Block II)	NOV 87	NOV 87	NOV 87
DAB Program Review	JUL 92	AUG 93	AUG 93
Block II RDT&E Contract Award (EMD)	JUL 92	SEP 93	OCT 93
ASAS Extended Experiment	N/A	N/A	MAR 94 (Ch-1)
Phase 2 (TSE Functionality) Prototype Delivery	N/A	JUL 95	N/A (Ch-2)
Phase 3 (EAC Functionality) Prototype Delivery	N/A	MAR 96	N/A (Ch-2)
Preliminary Design Review	MAY 94	MAR 96	N/A (Ch-3)
Critical Design Review	DEC 94	AUG 96	N/A (Ch-3)
DT&E			
Start	MAY 96	JAN 98	N/A (Ch-3)
Complete	SEP 96	FEB 98	N/A (Ch-3)
IOT&E			

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9a. (U) Schedule (Cont'd):
BLOCK II/III

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>	
Start	MAR 97	JUL 98	N/A	(Ch-3)
Complete	MAY 97	SEP 98	N/A	(Ch-3)
Milestone III	NOV 97	N/A	N/A	(Ch-3)
Contract Award	FEB 98	N/A	N/A	
First Article Test	FEB 00	FEB 00	N/A	
Organic Support Capability	N/A	OCT 98	N/A	(Ch-2)
Depot Support Capability	N/A	NOV 98	N/A	(Ch-2)
Block II Milestone III	N/A	APR 99	N/A	(Ch-2)
Block II Prod Contract Award	N/A	MAY 99	N/A	(Ch-2)
Initial Operational Capability	AUG 02	DEC 99	N/A	(Ch-3)
Block III EMD Contract Award	N/A	JUN 99	N/A	(Ch-2)
Block III FOT&E	N/A	OCT 02	N/A	(Ch-2)
Block III Milestone III	N/A	JUL 03	N/A	(Ch-2)
Incremental Delivery, Phase 1	N/A	N/A	JUN 95	(Ch-1)
Developmental Testing	N/A	N/A	JUL 95	(Ch-1)
Program Review Decision to Procure	N/A	N/A	OCT 95	(Ch-1)
Phase 1 CHS Replacements				
Incremental Delivery, Phase 2	N/A	N/A	JUN 96	(Ch-1)
Developmental Testing	N/A	N/A	JUL 96	(Ch-1)
Limited User Test	N/A	N/A	OCT 96	(Ch-1)
Program Review Decision to Procure	N/A	N/A	JAN 97	(Ch-1)
Phase 2 CHS Replacements				
Incremental Delivery, Phase 3	N/A	N/A	JUN 97	(Ch-1)
Developmental Testing	N/A	N/A	JUL 97	(Ch-1)
Program Review Decision to Procure	N/A	N/A	OCT 97	(Ch-1)
Phase 3 CCS Replacements				
Incremental Delivery, Phase 4	N/A	N/A	JUN 98	(Ch-1)
Developmental Testing	N/A	N/A	JUL 98	(Ch-1)
Limited User Test	N/A	N/A	OCT 98	(Ch-1)
Block II Milestone III/Block III	N/A	N/A	DEC 98	(Ch-1)
Milestone II				

b. (U) Previous Change Explanations --

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. 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. 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

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9b. (U) Schedule (Cont'd):

BLOCK II/III

award.

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 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.

Block II RDT&E contract award changed from SEP93 to OCT93 to reflect actuals. Milestones added to the APB dated October 21, 1993. Contract award changed from NOV99 to N/A because it is no longer part of the approved program. Initial Operational Capability changed from AUG01 to DEC99 IAW accelerated fielding.

c. (U) Current Change Explanations --

(Ch-1) The new APB being processed includes new milestones not originally in the SAR Development Estimate.

(Ch-2) Due to restructured streamlined program, milestones are no longer applicable to the ASAS Block II, are being deleted from the ASAS Block II APB, and will be deleted from future SARs.

(Ch-3) Milestones are no longer applicable because of the new restructured program.

d. (U) References --

(U) Development Estimate:

Acquisition Program Baseline approved December 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

10. (U) Performance Characteristics:

BLOCK I

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):
BLOCK I

DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
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(b)(1)



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10a. (U) Performance Characteristics (Cont'd):
BLOCK I

DE	Approved	Demon-	Current
	Program	strated	Estimate
	<u>Objective/Threshold</u>	<u>Perf</u>	
(b)(1)			

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10a. (U) Performance Characteristics (Cont'd):
BLOCK I

DE	Approved	Demon-	Current
	Program	strated	Estimate
<u>Objective/Threshold</u>			
<u>Perf</u>			
(b)(1)			

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10a. (U) Performance Characteristics (Cont'd):

BLOCK I

	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Reliability (TSE/TCAE)				
Mean Time Between Operational Mission Failures (hrs)				

(b)(1)

Definition of acronyms:

Communication - Bit Error Rate 99% of the time

MTBOF - Mean Time Between Operational Mission Failures (hours)

MTTR - Mean Time to Repair (Unit level, in hours)

NA - Not Applicable

NT - Not Tested

OD - On Demand

TOC - Tactical Operations Center

TCAE - Technical Control and Analysis Element

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

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 (JTFF) Special Task Force (STF), 5 July 1984.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

BLOCK II/III

	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
a. (U) Performance --				
Speed (ACE)				

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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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(b)(1)



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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
After completion of intelligence preparation of the battlefield, assist the operator in determining the following events (time in hours, after occurrence of initial critical event of activity under consideration):			

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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

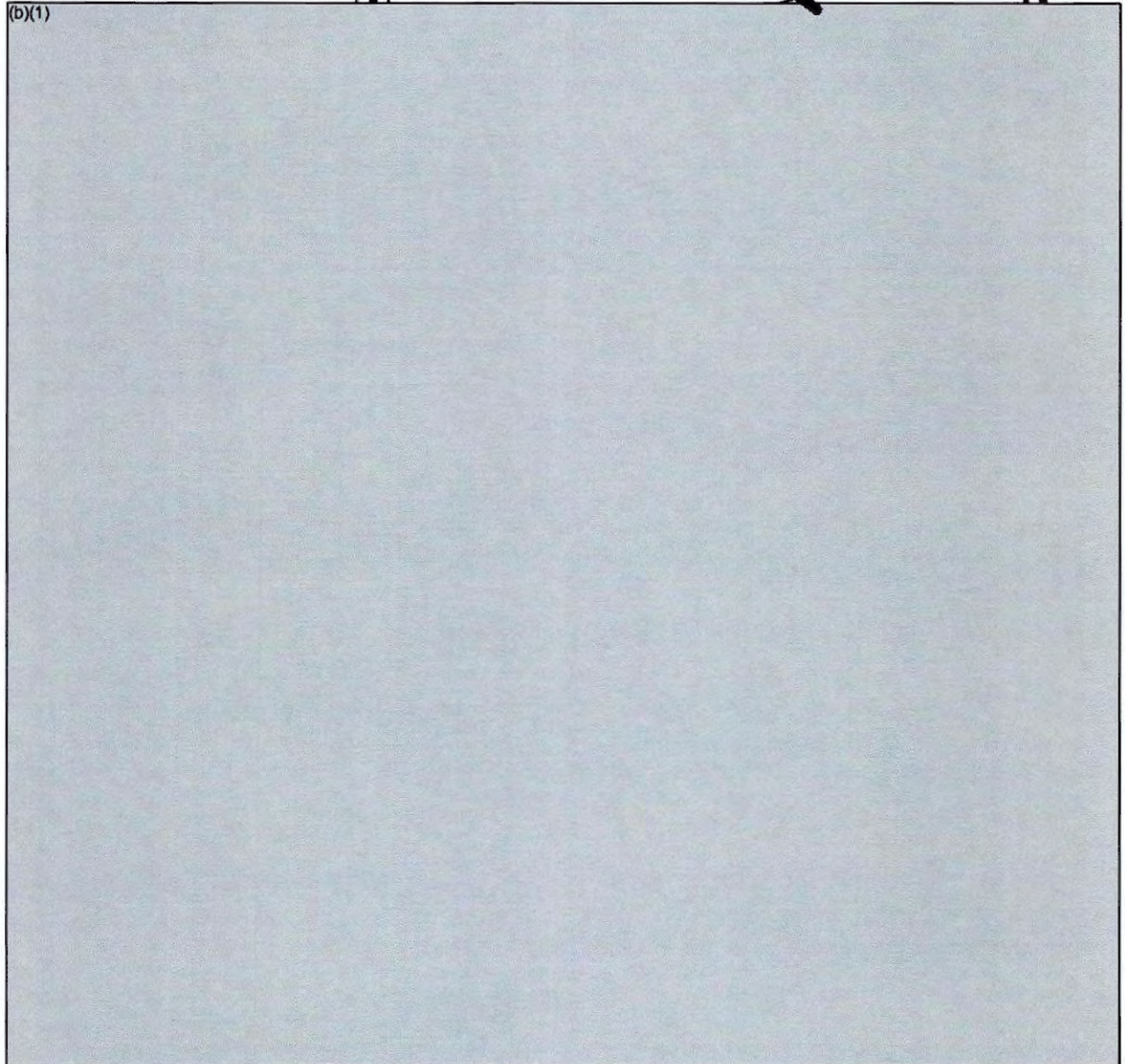
DE	Approved	Demon-	Current
	Program	strated	Estimate
Objective/Threshold Perf			
(b)(1)			

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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

	Approved Program		Demon- strated	Current
	<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>
Output				
(b)(1)				

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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Development		Source corre- lated database auto-IPB product, receive, manipu- late, display, & store secon- dary/UAV imagery.	Source corre- lated database & auto IPB products	Source corre- lated database auto-IPB product, receive, manipu- late, display, & store secon- dary/UAV imagery.
Target Development	N/A	Auto genera- tion of target nomina- tion msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.	/ Genera- tion of target nomina- tion msg w/in 2 minutes of receipt of info meeting analyst preset criteria in 85% of all cases.	TBD Auto genera- tion of target nomina- tion msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.

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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Collection Management	N/A	Integra- / Integra- tion of tion of DoD Std Army Collect- Std. ion Mgt Collect- Systems. ion Mgt. Systems	TBD	Integra- tion of DoD Std Collect- ion Mgt Systems.
Interoperability with ATCCS (SCI/Collateral)	N/A	Auto / Manual Sanitize Sanitize	TBD	Auto Sanitize
Interoperability with DIA MIIDS/IDB	N/A	Auto / Bulk Data Load Base Updates Exchange	TBD	Auto Data Base Exchange
Direct transmission/receipt of SCI/Non-SCI Message Traffic	N/A	Computer / Process to All ASAS Computer Required File DoD Std. Exchange MTF Messages Automa- tically in 95% of all trials.	TBD	Computer to Computer File Exchange
Message Volume	N/A	Process / Process 29,000 21,000 combined combined I/O msgs I/O msgs w/ peak w/ peak => 4,350 => 2,100 per hour per hour in 24 in 24 hours at hours at Division Division	TBD	Process 29,000 combined I/O msgs w/ peak => 4,350 per hour in 24 hours at Division
DIA Accreditation for Operation	N/A	Multi- / System Level High Security	TBD	Multi- Level Security

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10a. (U) Performance Characteristics (Cont'd):
BLOCK II/III

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Continuity of operations during tactical redeployment	N/A	Process / Process => 2,828 => 1,365 I/O msgs I/O msgs combined combined during during peak peak hour. hour.	TBD	Process => 2,828 I/O msgs combined during peak hour.

ACRONYMS:

USMTF - US Message Text Format
TSE - Tactical Operations Center Support Element
TCAE - Technical Control and Analysis Element
FSIC - Forward Sensor Interface and Control
ENSIT - Enemy Situation
CCS - Communications Control Set
G2-TOC - Assistant Chief of Staff, Intelligence (General Staff)
Tactical Operations Center

Footnotes:

1/ Due to the evolutionary nature of ASAS, the noted performance parameters represent a desired military capability for the initial fielding and Block II development of ASAS. Performance parameters of enhancements and upgrades will meet full ORD requirements and Defense Information Systems Agency (DISA)/DODIIS Interoperability Standards, and will be provided during the evolutionary phase of the program.

2/ Block III will provide the remote workstation, enhance the previously developed software applications functionality, and provide new software applications in the disciplines of electronic warfare, operations security, human intelligence, imagery intelligence, and communication intelligence/electronic intelligence integration. Block III performance parameters will be provided prior to Block III Critical Design Review (CDR).

b. (U) Previous Change Explanations --

In some instances the Current Estimate does not match the Development Estimate. This situation has existed since the initial SAR. Therefore, no previous or current changes exist.

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10c. (U) Performance Characteristics (Cont'd):
BLOCK II/III

c. (U) Current Change Explanations --

(Ch-1) - The Combat mission responsiveness value change corrects error in the previous SAR. The values are omitted here to keep this page unclassified.

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated 19 December 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
BLOCK I

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	998.8	940.1	965.8
Procurement	771.1	366.1	372.6
TOTAL FLYAWAY	(771.1)		(261.7)
Other Wpns Sys Costs			(93.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(17.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 86 Base-Year \$	1769.9	1306.2	1338.4
Escalation	240.0	189.2	166.1
Development (RDT&E)	(79.9)	(105.0)	(81.2)
Procurement	(160.1)	(84.2)	(84.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2009.9	1495.4	1504.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	12	12
Total	0	12	12

ASAS unit of measure consists of a system being fielded to 12 Army Contingency units. These units are Army priority units identified in Division, Corps, and Echelons-Above-Corps.

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11c. (U) Total Program Cost and Quantity (Cont'd):
BLOCK I

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 (JTFF) Special Task Force (STF), 5 July 1984.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

BLOCK II/III

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	512.1	259.3	256.3
Procurement	1231.8	279.8	268.2
TOTAL FLYAWAY	(1231.8)		(192.5)
Other Wpn Sys Costs			(52.2)
Peculiar Support	(0.0)		(0.5)
Initial Spares	(0.0)		(23.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 86 Base-Year \$	1743.9	539.1	524.5
Escalation	1187.7	270.7	302.8
Development (RDT&E)	(270.1)	(108.2)	(117.5)
Procurement	(917.6)	(162.5)	(185.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2931.6	809.8	827.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>0</u>	<u>28</u>	<u>28</u>
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
Echelons-Above-Corps.

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11c. (U) Total Program Cost and Quantity (Cont'd):
BLOCK II/III

c. (U) Foreign Military Sales/International Cooperative Programs --
Not Applicable.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated December 1991.
FY93 President's Budget dated February 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

12. (U) Unit Cost Summary:

BLOCK I

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY86\$)	1338.4	1306.2	
(2) Quantity	12	12	
(3) Unit Cost	111.53	108.85	2.47
b. (U) Procurement			
(1) Cost (BY86\$)	372.6	366.1	
(2) Quantity	12	12	
(3) Unit Cost	31.05	30.51	1.78

BLOCK II/III

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY86\$)	524.5	539.1	
(2) Quantity	28	28	
(3) Unit Cost	18.732	19.254	-2.708

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12. (U) Unit Cost Summary (Cont'd):

BLOCK II/III

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY86\$)	268.2	279.8	
(2) Quantity	28	28	
(3) Unit Cost	9.579	9.993	-4.146

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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	+2.3	-28.2	-	-25.9
Quantity	-	+1179.0	-	+1179.0
Schedule	-	+24.2	-	+24.2
Engineering	-	-	-	-
Estimating	-449.3	-3646.9	-	-4096.2
Other	-	-	-	-
Support	-	+332.9	-	+332.9
Subtotal	-447.0	-2139.0	-	-2586.0
Current Changes:				
Economic	0.3	-8.1	-	-7.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	6.6	23.8	-	+30.4
Other	-	-	-	-
Support	-	-46.3	-	-46.3
Subtotal	+6.9	-30.6	-	-23.7
Total Changes	-440.1	-2169.6	-	-2609.7
Current Estimate	1420.8	911.0	-	2331.8

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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	-	+686.1	-	+686.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-291.8	-2248.6	-	-2540.4
Other	-	-	-	-
Support	-	+213.2	-	+213.2
Subtotal	-291.8	-1349.3	-	-1641.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	3.0	13.8	-	+16.8
Other	-	-	-	-
Support	-	-26.6	-	-26.6
Subtotal	+3.0	-12.8	-	-9.8
Total Changes	-288.8	-1362.1	-	-1650.9
Current Estimate	1222.1	640.8	-	1862.9

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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	+5.6	-2.5	-	+3.1
Quantity	-	+315.0	-	+315.0
Schedule	-	+3.1	-	+3.1
Engineering	-	-	-	-
Estimating	-37.3	-939.5	-	-976.8
Other	-	-	-	-
Support	-	+159.8	-	+159.8
Subtotal	-31.7	-464.1	-	-495.8
Current Changes:				
Economic	1.5	-3.3	-	-1.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.5	0.8	-	-0.7
Other	-	-	-	-
Support	-	-7.1	-	-7.1
Subtotal	-	-9.6	-	-9.6
Total Changes	-31.7	-473.7	-	-505.4
Current Estimate	1047.0	457.5	-	1504.5

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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	-	+236.4	-	+236.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-31.7	-746.7	-	-778.4
Other	-	-	-	-
Support	-	+115.8	-	+115.8
Subtotal	-31.7	-394.5	-	-426.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.3	0.9	-	-0.4
Other	-	-	-	-
Support	-	-4.9	-	-4.9
Subtotal	-1.3	-4.0	-	-5.3
Total Changes	-33.0	-398.5	-	-431.5
Current Estimate	965.8	372.6	-	1338.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Estimating: Adjustment for current and prior inflation. Reduction of costs as a result of program restructure from 268 modules to 149 modules to 137 modules and final restructure to 12 systems. Decrease of estimate for withdrawal of Air Force funding from FY91 and beyond. Increase in costs due to changes in methodology (BCE vs. ACP).

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13b. (U) Cost Variance Analysis (Cont'd):
BLOCK I

Procurement

Economic: Revised escalation indices. Adjustment for negative program change.
Adjustment of program change inflation for addition of inventory objective.

Quantity: Quantity variance resulting from restructuring from 268 modules to 149 modules to 137 modules and final restructure to 12 systems.
Addition of quantities to reflect program inventory objective.

Schedule: Delay of contract procurement efforts up to one year.

Estimating: Adjustment for current and prior inflation.
Adjustment of program costs for restructure from 268 modules to 149 modules to 137 modules and final restructure to 12 systems. Revised program reflects accelerated program. Increase program cost to include total program content beyond FYDP.
Increase in estimate for conversion of OMA to OPA dollars for FY92-FY97 for directed categories.
Correction of previous SAR to change initial spares from estimating to support. Increase due to changes in cost methodology going from (BCE to ACP).

Support: Adjustment for current and prior inflation.
Reduction of initial spares requirement.
Refinement of estimate to include support cost.
Correction of previous SAR to change initial spares from estimating to support. Decrease due to changes in cost methodology going from BCE to ACP.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+1.5
Adjustment for Current & Prior Inflation. (Estimating)	-1.3	-1.5
RDT&E Subtotal	-1.3	--
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.4

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13c. (U) Cost Variance Analysis (Cont'd):
BLOCK I

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	+2.3	+2.6
Estimation of economies to be achieved from CHS program participation. (Estimating)	-1.4	-1.8
Adjustment for Current & Prior Inflation. (Support)	+0.6	+0.7
Reductions in Block I support requirements. (Support)	-5.5	-7.8
Procurement Subtotal	-4.0	-9.6

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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	-3.3	-25.7	-	-29.0
Quantity	-	+864.0	-	+864.0
Schedule	-	+21.1	-	+21.1
Engineering	-	-	-	-
Estimating	-412.0	-2707.4	-	-3119.4
Other	-	-	-	-
Support	-	+173.1	-	+173.1
Subtotal	-415.3	-1674.9	-	-2090.2
Current Changes:				
Economic	-1.2	-4.8	-	-6.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	8.1	23.0	-	+31.1
Other	-	-	-	-
Support	-	-39.2	-	-39.2
Subtotal	+6.9	-21.0	-	-14.1
Total Changes	-408.4	-1695.9	-	-2104.3
Current Estimate	373.8	453.5	-	827.3

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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	-	+449.7	-	+449.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-260.1	-1501.9	-	-1762.0
Other	-	-	-	-
Support	-	+97.4	-	+97.4
Subtotal	-260.1	-954.8	-	-1214.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.3	12.9	-	+17.2
Other	-	-	-	-
Support	-	-21.7	-	-21.7
Subtotal	+4.3	-8.8	-	-4.5
Total Changes	-255.8	-963.6	-	-1219.4
Current Estimate	256.3	268.2	-	524.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices and adjustment for negative program change.

Estimating: Adjustment for current and prior inflation. 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. De-scoping of development efforts for remote workstations as a result of budget reduction, removal of Blocks IV & V and refinement of estimate for Block III and breakout of Block I

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13b. (U) Cost Variance Analysis (Cont'd):

BLOCK II/III

cost for separate reporting. Increases in estimate due to changes in methodology going from BCE to ACP.

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change. Adjustment of program change inflation for addition of inventory objective.

Quantity: Quantity Variance resulting from restructuring from 268 modules to 28 systems.

Schedule: Delay in contract award to FY99.

Estimating: Adjustment of program costs for restructure from 268 modules to 28 systems. Increase due to changes in methodology going from BCE to ACP.

Support: Decrease in initial spares requirements. Decrease in support costs based on accelerated Block II/III fielding. Increase due to changes in costing methodology for initial spares, peculiar support equipment, and weapon system support (BCE vs ACP).

c. (U) Current Change Explanations --

(Dollars in Millions)		
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.3
Decrease resulting from reprogramming funds to OPA supporting ASAS-Extended acquisition. (Estimating)	-9.9	-14.1
Inclusion of D2FT funds from test community. (Estimating)	+3.0	+3.9
Re-estimation of Block II/III Software upgrade requirements and capabilities. (Estimating)	+11.0	+18.0
RDT&E Subtotal	<u>+4.3</u>	<u>+6.9</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-7.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.6

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13c. (U) Cost Variance Analysis (Cont'd):
BLOCK II/III

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Re-estimation of Block II outyear procurement requirements. (Estimating)	+12.9	+23.0
Revised estimate resulting in decrease for initial spares due to use of CHS hardware. (Support)	-1.5	-2.5
Decreased support cost associated with Capability Package hardware. (Support)	-20.2	-36.7
Procurement Subtotal	-8.8	-21.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

BLOCK I

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	125.375

No initial estimate for PAUC was possible because no unit of measure had been defined.

BLOCK II/III

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
30.050	--	--	--	--	--	--	--	--	N/A

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	29.546

No Initial Estimate for PAUC was possible because no unit of measure had been defined.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --			Initial Contract Price		
(U) ASAS Block II:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Martin Marietta Astro, Littleton, CO					
DAAG07-94-C-A515, CPAF			\$115.2	\$115.2	28
Award: October 29, 1993					
Definitized: October 29, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$113.1	\$113.1	28	\$134.2	\$114.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.0	\$0.0	
Cumulative Variances To Date (09/15/93)			\$1.9	\$3.9	
Net Change			\$1.9	\$3.9	

Explanation of Change:

Phase I was refocused to implement directed Common Operating Environment (COE) infrastructure; the CHS II contract award slipped; and, incremental deliveries will now go through integration and test as products to be fielded.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 56.5% (13 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 69.1% (\$1611.2 / \$2331.8)

BLOCK I

- (1) Percent Program Completed: 81.3% (13 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 99.3% (\$1493.9 / \$1504.5)

BLOCK II/III

- (1) Percent Program Completed: 33.3% (5 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 14.2% (\$117.3 / \$827.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years (FY83-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2005)</u>	<u>Total</u>
RDT&E	1159.8	52.7	37.4	170.9	1420.8
Procurement	451.4	10.0	7.9	441.7	911.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1611.2	62.7	45.3	612.6	2331.8

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16b. (U) Program Funding Summary (Cont'd):

BLOCK I

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

BLOCK I

<u>Appropriation</u>	<u>Prior Years (FY83-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98)</u>	<u>Total</u>
RDT&E	1047.0	-	-	-	1047.0
Procurement	446.9	4.5	3.0	3.1	457.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1493.9	4.5	3.0	3.1	1504.5

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

BLOCK II/III

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2005)</u>	<u>Total</u>
RDT&E	112.8	52.7	37.4	170.9	373.8
Procurement	4.5	5.5	4.9	438.6	453.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	117.3	58.2	42.3	609.5	827.3

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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 \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1983				27.8	25.8	25.8	25.8	4.0
1984				48.3	46.4	46.4	46.4	3.8
1985				66.9	66.3	66.3	66.3	3.4
1986				142.6	145.3	145.3	145.3	2.8
1987				141.5	148.7	148.7	148.7	2.7
1988				135.3	147.9	147.9	147.9	3.0
1989				108.0	122.8	122.8	122.8	4.2
1990				75.1	88.7	88.7	88.7	4.1
1991				47.1	57.7	57.7	57.7	4.3
1992				68.5	86.1	86.1	85.4	3.0
1993				6.4	8.3	8.3	7.8	2.7
1994								2.0
1995				2.2	3.0	2.4	0.6	2.7
Subtot				869.7	947.0	946.4	943.4	

Does not include Air Force dollars of \$100M.

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16c. (U) Program Funding Summary (Cont'd):
BLOCK I

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2035 Other Procurement, Army

1987	3		79.8	86.0	93.7	93.7	93.7	2.7
1988	1		31.2	33.7	38.2	38.2	38.2	3.0
1989	1		18.0	21.3	25.2	25.2	25.2	4.2
1990	2		54.1	67.2	82.2	82.2	82.2	4.1
1991	1		24.5	26.4	33.3	33.3	33.3	4.3
1992	2		19.0	45.2	58.5	58.5	52.1	3.0
1993	2		18.9	43.7	58.1	57.7	53.5	2.7
1994			6.2	28.6	38.8	37.9	23.7	2.0
1995			3.5	13.4	18.9	15.3	3.8	2.7
1996			2.6	3.1	4.5			3.0
1997			2.0	2.0	3.0			3.0
1998			1.9	2.0	3.1			3.0
Subtot	12		261.7	372.6	457.5	442.0	405.7	
Army	12		261.7	1242.3	1404.5	1388.4	1349.1	

Recurring costs occurring without corresponding quantities are costs for PMAS and test activities.

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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: 3600 Research, Development, Test + Eval, AF

1983				5.6	5.2	5.2	5.2	4.0
1984				5.8	5.6	5.6	5.6	3.8
1985				14.9	14.8	14.8	14.8	3.4
1986				25.2	25.7	25.7	25.7	2.8
1987				23.5	24.7	24.7	24.7	2.7
1988				7.0	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	4.1
Subtot				96.1	100.0	100.0	100.0	
USAF				96.1	100.0	100.0	100.0	
Grand Total	12		261.7	1338.4	1504.5	1488.4	1449.1	

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16c. (U) Program Funding Summary (Cont'd):
BLOCK II/III

c. (U) Annual Summary -- BLOCK II/III

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1991				2.7	3.3	3.3	3.0	4.3
1992				15.2	19.1	19.0	18.8	3.0
1993				33.3	42.9	42.9	40.4	2.7
1994				6.4	8.4	8.2	5.1	2.0
1995				28.7	39.1	31.6	7.8	2.7
1996				37.6	52.7			3.0
1997				25.9	37.4			3.0
1998				16.7	24.9			3.0
1999				17.9	27.4			3.0
2000				15.1	23.8			3.0
2001				20.6	33.4			3.0
2002				18.6	31.1			3.0
2003				17.6	30.3			3.0
2004								3.0
Subtot				256.3	373.8	105.0	75.1	

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16c. (U) Program Funding Summary (Cont'd):
BLOCK II/III

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2035 Other Procurement, Army

1995			2.2	3.2	4.5	2.1	0.1	2.7
1996			2.1	3.8	5.5			3.0
1997			2.0	3.3	4.9			3.0
1998			1.3	3.9	6.0			3.0
1999	2		20.5	22.2	34.8			3.0
2000	5		22.3	41.5	67.0			3.0
2001	10		42.5	48.7	81.0			3.0
2002	9		34.6	48.7	83.4			3.0
2003	2		31.5	44.4	78.3			3.0
2004			33.5	47.2	85.7			3.0
2005				1.3	2.4			3.0
Subtot	28		192.5	268.2	453.5	2.1	0.1	
Grand Total	28		192.5	524.5	827.3	107.1	75.2	

Recurring costs occur without corresponding quantities due to procurement of ASAS-Extended hardware.

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17. (U) Production Rate Data:

BLOCK I

- | | |
|------------------------------------|----------------|
| a. (U) Deliveries (Plan/Actual) -- | <u>To Date</u> |
| RDT&E | 2/2 |
| Procurement | 12/12 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

BLOCK II/III

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

BLOCK I

- a. (U) Assumptions and Ground Rules --

(Reference: Army Cost Position (ACP) July 1993) 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 civilian personnel costs for operators, maintainers, and management. Consumables consists of Petroleum, Oils and Lubricants (POL). 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.

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18b. (U) Operating and Support Costs (Cont'd):
BLOCK I

b. (U) Costs -- (FY ASAS Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Block I	Avg Annual Cost Per Antecedent
Personnel	1.2	N/A
O&S Consumables	0.0	N/A
Direct Depot Maintenance	1.0	N/A
Sustaining Investment	0.4	N/A
Other Direct Costs	0.1	N/A
Indirect Costs	0.9	N/A
Total	3.6	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O & M	14.0	7.5	8.2	---	29.7
Total	14.0	7.5	8.2	---	29.7

BLOCK II/III

a. (U) Assumptions and Ground Rules --

(Reference: Army Cost Position (ACP), July 1993) 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 intermediate (DS/GS) level,

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ASAS, December 31, 1994

18a. (U) Operating and Support Costs (Cont'd):

BLOCK II/III

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 material 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 Block II	Avg Annual Cost Per Antecedent
Personnel	1.7	1.2
O&S Consumables	0.0	0.0
Direct Depot Maintenance	0.4	1.0
Sustaining Investment	0.2	0.4
Other Direct Costs	0.2	0.1
Indirect Costs	0.4	0.9
Total	2.9	3.6

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DP-COMP(O&A)823)
PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 1994

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AS AMENDED
CLEARED--

FOR OPEN PUBLICATION

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	BC James R. Snider
ATTN: SFAE-AV-RAH	Assigned: September 27, 1994
4300 Goodfellow Blvd.	AV 693-1800 COMM 314 263-1800
St. Louis, MO 63120-1798	

DIRECTOR

AM

DEPARTMENT OF DEFENSE

INFORMATION

(S)

6. (U) Program Elements/Procurement Line Items:

RDTE&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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~~Classified by: Comanche Security Classification Guide, November 27, 1992~~
~~Declassify on: OADR~~
~~Downgrade Instructions: None~~

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Comanche (RAH-66), December 31, 1994

5. (U) Related Programs:

Air-to-Air Stinger Missile System; Hellfire Anti-tank Missile System; AH-64 Apache and Longbow.

6. (U) Mission and Description:

This program provides for the development of the RAH-66 Comanche. The Army requires an aviation system capable of performing aerial reconnaissance on the modern battlefield. Combat lessons learned and mission analysis have repeatedly supported a critical combat requirement for an aviation reconnaissance system capable of 24 hour combat operations, responsive to the battlefield commander in night and adverse weather conditions and able to survive on the 21st century battlefield. This air cavalry helicopter system will be self-deployable with highly improved sustainability and availability to support continuous combat operations in any world trouble spot. Comanche will be able to find the enemy with a low probability of self-detection and either engage or hand-off the target based on the battle commander's decision. The air cavalry system will be able to operate effectively in the close, deep or rear battles. Comanche incorporates emerging technologies to provide a leap-ahead air cavalry system, field a world-wide deployable, air cavalry reconnaissance helicopter; operate with minimal logistical burden, serve as the command and control node for the commander to win the knowledge war. This system will provide three dimensional battlefield situational awareness with greater depth and breadth than currently possible. This picture of the battlefield will be overlaid on digital maps that consolidate all real time data. The system will display friend or foe discrimination and will avoid detection and survive by reducing signature and incorporating low observable technology. The Comanche helicopter will replace the current light fleet of tactically obsolescent AH-1, OH-6 and OH-58A/C helicopters. The Comanche system will be integrated with the Army aviation force structure to complement the AH-64 Apache 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. From that review, the Comanche emerged as the most viable concept to meet fleet needs. A Comanche Justification for Major Systems New Start (JMSNS) was submitted in June 1983. The Comanche was further developed and refined during FY 1984. In December 1985, a Defense Science Board (DSB) Task Force was established to review the Comanche program. The task force reported 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. As the result of the June 9, 1988, Comanche Milestone I Defense Acquisition Board (DAB) review, an Acquisition Decision Memorandum (ADM) dated June 17, 1988,

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Comanche (RAH-66), December 31, 1994

7a. (U) Program Highlights (Cont'd):

approved the Comanche program to proceed with Demonstration/Validation (Dem/Val). In 1988, the Light Helicopter Turbine Engine Company (LHTEC) was announced the winner of the competitive T800 engine program. The program was restructured in August 1990 to defer the Engineering Manufacturing and Development (EMD) and extend the Dem/Val phase by an additional two years. In 1991, the Boeing Sikorsky team was declared the winner of the competitive Comanche air vehicle program and was awarded a contract for the Dem/Val Prototype phase. The Comanche program was again restructured in January 1992, as a result of the Defense Acquisition Executive Guidance and the FY 1993, President's budget reductions. The restructured contract modifications were issued to Boeing Sikorsky and LHTEC in January 1993.

b. (U) Significant Developments Since Last Report --
In December 1994, at the direction of the Secretary of Defense (SecDef), the Comanche Program was to be restructured as a prototype industrial/technology base program retaining the two flyable prototypes.

The Comanche system is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --
As the result of the Defense Acquisition Board review of the Comanche restructured program, an ADM was issued in March 1995, to continue the Demonstration/Validation phase with two flyable prototypes and add six aircraft within the FYDP for user evaluation.

8. (U) Threshold Breaches:

The restructure based upon the SecDef decision has resulted in schedule breaches to the approved Acquisition Program Baseline (APB) dated January 4, 1993. Unit cost reporting is not required for this pre-milestone II program in accordance with Section 2433, Title 10, USC.

The Program Manager's Office is conducting a detailed schedule assessment to achieve the approved restructured Comanche Program. A revised APB will be submitted in accordance with the March 1995 ADM.

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Comanche (RAH-66), December 31, 1994

9. (U) Schedule:

a. (U) Milestones --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
T800 Engine FSD Contract Award	JUL 85	JUL 85	JUL 85
Milestone I (ASARC)	FEB 87	MAY 88	MAY 88
Milestone I (DAB)	MAR 87	JUN 88	JUN 88
Award Air Vehicle Phase I 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
Early Operational Assessment			
Start	N/A	OCT 91	N/A (Ch-1)
Complete	N/A	APR 97	N/A (Ch-1)
Critical Design Review	N/A	OCT 93	DEC 93
Dem/Val Prototype Flight Test Program			
Start	N/A	AUG 95	NOV 95 (Ch-2)
Complete	N/A	SEP 97	OCT 01 (Ch-2)
Milestone II (ASARC)	FEB 87	N/A	N/A
Milestone II (DAB)	MAR 87	OCT 97	OCT 01 (Ch-2)
Award EMD Contract	JUL 89	NOV 97	NOV 01 (Ch-2)
First Flight	SEP 91	N/A	N/A
T800 Engine Production Contract Award	JAN 93	JUL 99	NOV 04 (Ch-2)
DT/LUT			
Start	N/A	APR 00	JUL 03 (Ch-2)
Complete	NOV 93	JUL 00	SEP 03 (Ch-2)
LRIP Program Review	N/A	OCT 00	NOV 04 (Ch-2)
FDT&E/ARTEP			
Start	N/A	MAR 02	JAN 05 (Ch-2)
Complete	N/A	MAY 02	AUG 05 (Ch-2)
IOT			
Start	N/A	JUN 02	SEP 05 (Ch-2)
Complete	N/A	SEP 02	NOV 05 (Ch-2)
First Air Vehicle Production Delivery	JUL 95	FEB 02	JUL 06 (Ch-2)
First Unit Equipped	MAY 96	DEC 02	N/A (Ch-2)
Full Rate Production Contract Award	JAN 94	JAN 03	NOV 06 (Ch-2)
Milestone III (ASARC/DAB)	JAN 94	NOV 02	JUL 06 (Ch-2)
IOC	N/A	JAN 03	JUL 06 (Ch-2)
RAM Validation			
Start	N/A	FEB 03	NOV 95 (Ch-2)
Complete	N/A	MAR 04	JUL 06 (Ch-2)

b. (U) Previous Change Explanations --

Milestones revised from AMC approved Acquisition Strategy (December 16, 1985) to reflect 1995 IOC Acquisition strategy as approved by the Chief of Staff of the Army on November 10, 1986.

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Comanche (RAH-66), December 31, 1994

9b. (U) Schedule (Cont'd):

Milestones were revised based upon DAE approved baseline dated June 15, 1988 (Milestone I ADM, dated June 17, 1988). Milestones changed as a result of a schedule assessment made in response to the direction contained in the SecDef letter, August 23, 1990. Program restructured per DAE, January 29, 1992, subject: Implementation of Acquisition Decision. Dates changed from TBD to the current estimate dates shown in Approved Program Baseline dated January 4, 1993 due to initiation of the Comanche Restructured Dem/Val Prototype Program. Critical Design Review milestone revised to actual date. Dem/Val Prototype Flight Test Program Start milestone revised as a result of schedule assessment.

c. (U) Current Change Explanations --

(Ch-1) Has been deleted from the current baseline to reflect duplication between milestones Early Operational Assessment and Limited User Testing.

(Ch-2) The Current Estimate of schedule milestone dates have changed in response to the approval of the Army's restructured program which continues the Dem/Val phase and adds six aircraft in the FYDP for use evaluation. The following milestones have changed.

Dem/Val Prototype Flight Test Program Start from Aug 95 to Nov 95.
Dem/Val Prototype Flight Test Program Complete from Sept 97 to Oct 01
Milestone II(DAB) from Oct 97 to Oct 01.
Award EMD Contract from Nov 97 to Nov 01.
T800 Production Contract Award from Jul 99 to Nov 04.
LUT Start from Apr 00 to Jul 03.
LUT Complete from Jul 00 to Sep 03.
LRIP Program Review from Oct 00 to Nov 04.
IOTE Training/ARTEP Start from Mar 02 to Jan 05.
IOTE Training/ARTEP Complete from May 02 to Aug 05.
IOT&E Start from Jun 02 to Sep 05.
IOT&E Complete from Sep 02 to Nov 05.
First Air Vehicle Production Delivery from Feb 02 to Jul 06.
First Unit Equipped from Dec 02 to N/A.
Full Rate Production Contract Award from Jan 03 to Nov 06.
Milestone III(ASARC/DAB) from Nov 02 to Jul 06.
IOC from Jan 03 to Jul 06.
RAM Validation Start from Feb 03 to Nov 95.
RAM Validation Complete from Mar 04 to Jul 06.
Air Vehicle Production Contract Award (LRIP) from N/A to Nov 94.

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Comanche (RAH-66), December 31, 1994

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Planning Estimate:

AMC Approved Acquisition Strategy (December 16, 1985).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --		Approved Program		Demon- strated	Current
	<u>PE</u>	<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>
RAH Primary Mission					
Gross Weight (PMGW)					
Empty Weight (lbs)	N/A	7765	/ 8300	TBD	7765
Gross Weight (lbs)	N/A	10595	/ 11900	TBD	10595
Flight Performance					
(Primary Mission):					
RAH					
Vertical Rate of	500	1420	/ 500	TBD	860 (Ch-1)
Climb (VROC) Feet					
per Minute (FPM)					
4000 ft/95 deg F @					
(PMAW)					
Dash Speed, Knots	N/A	175	/ 160	TBD	175
@ 4000 ft/95 deg F					
Turn to Target (sec)	N/A	4.7	/ 7.0	TBD	4.7
Single Engine	N/A	40	/ 80	TBD	40
Operation, Knots					
@ CRP 100 FPM					
Rate of Climb					
Crashworthiness	N/A	38	/ 28	TBD	38
(Vertical Impact					
Velocity, FPS)					
EMI/EMP Protection	N/A	200	/ 100	TBD	200
(Volt/M)					
Engine Size,	N/A	1400	/ 1320	TBD	1400
Intermediate Rated					
Power at Sea Level					
Standard					
Signature Levels:					

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Target Acquisition Range:				
(b)(1)				
Mean Time Between Essential Maintenance Action (MTBEMA) (hrs)	4.5	5.0 / 4.5	TBD	5.0
Mean Time Between Mission Affecting Failure (MTBMAF) (hrs)	8.4	9.8 / 8.5	TBD	9.8
Operational Availability (Ao):				
Wartime	N/A	78 / 75	TBD	78
Peacetime	N/A	87 / 86	TBD	87
Maintainability:				
Mean Time To Repair (MTR) (hrs)	1.0	.86 / 1.0	TBD	.86
Maintenance Manhours per flight hr. (MMH/FH)	2.8	2.6 / 2.8	TBD	2.6
Payload RAH Hellfire:				
Internal Missile Capacity	N/A	6 / 4	TBD	6
External Missile Capacity	N/A	8 / 4	TBD	8
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

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Comanche (RAH-66), December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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. MTSEMA 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) - VROC Changed from 500 to 860 to reflect the Armed Reconnaissance Mission Configuration Requirement which does not contain the Longbow Fire Control Radar.

d. (U) References --

(U) Planning Estimate:

AMC Approved Acquisition Strategy (December 16, 1985).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1993.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1756.2	4094.7	4683.8
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 84 Base-Year \$	1756.2	4094.7	4683.8
Escalation	376.8	1732.3	2428.0
Development (RDT&E)	(376.8)	(1732.3)	(2428.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2133.0	5827.0	7111.8
b. (U) Quantity --			
Development (RDT&E)	0	N/A	6
Procurement	<u>0</u>	<u>N/A</u>	<u>0</u>
Total	0	N/A	6

c. (U) Foreign Military Sales/International Cooperative Programs --
None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

AMC Approved Acquisition Strategy (December 16, 1985).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1993.

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Comanche (RAH-66), December 31, 1994

12. (U) 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)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	2133.0	0.0	0.0	2133.0
Previous Changes:				
Economic	+234.6	-	-	+234.6
Quantity	-	-	-	-
Schedule	+265.4	-	-	+265.4
Engineering	+455.4	-	-	+455.4
Estimating	+3867.2	-	-	+3867.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4822.6	-	-	+4822.6
Current Changes:				
Economic	-10.9	-	-	-10.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	167.1	-	-	+167.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+156.2	-	-	+156.2
Total Changes	+4978.8	-	-	+4978.8
Current Estimate	7111.8	-	-	7111.8

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RD&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	+2478.9	-	-	+2478.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2925.4	-	-	+2925.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	2.2	-	-	+2.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.2	-	-	+2.2
Total Changes	+2927.6	-	-	+2927.6
Current Estimate	4683.8	-	-	4683.8

b. (U) Previous Change Explanations --

RD&E

Economic: Revised escalation indices
 Schedule: Revised estimate for restructured program.
 Engineering: Revised estimate for LH Longbow Development.
 Estimating: Refined estimate for revised acquisition strategies to reflect varying competitive development time and prototype fly-off alternatives. Revised estimate to exclude Assault/Utility design. Revised estimate to include total program (FY93 through FY96). Revised estimate to reduce length and scope of Demonstration/Validation effort. Revised estimate of competitive T800 program. Revised estimate of LH development testing, and LH prototypes. Revised

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13b. (U) Cost Variance Analysis (Cont'd):

estimate for restructured Demonstration/Validation program. Revised estimate for restructured Demonstration/Validation phase and Engineering and Manufacturing Development. Revised estimate to incorporate Comanche Acquisition Streamline Program.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised escalation indices. (Economic)	N/A	-10.9
Adjustment for Current & Prior Inflation. (Estimating)	+3.6	+5.0
Revised estimate to Restructure Comanche Program to continue Dem/Val phase and add six aircraft within the FYDP for user evaluation. (Estimating)	-1.4	+162.1
RD&E Subtotal	+2.2	+156.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RD&E --

(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

\$1956.2 N/A 0

Current Contract Price
Target Ceiling Qty
\$2151.5 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$2151.5 \$2210.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-27.7	\$-12.1
Cumulative Variances To Date (11/30/94)	\$-33.8	\$-15.9
Net Change	\$-6.1	\$-4.8

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15. (U) Contract Information (Cont'd):

Explanation of Change:

Schedule performance is driven by delayed delivery of material and lack of test specimens to support developmental testing and delayed deliveries of material to support manufacturing of the Propulsion System Test Bed and Static Test Article.

Cost performance is due to design changes, analysis and tool design and fabrication of the Airframe and the Subsystem Power Unit.

(U) T800 Growth AVS: LHTEC, St. Louis, MO DAAJ09-92-C-0453, CPFF Award: April 13, 1992 Definitized: January 5, 1993	Initial Contract Price		
	Target	Ceiling	Qty
	\$208.3	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$208.6	N/A	0	\$203.8	\$205.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.2	\$-3.9
Cumulative Variances To Date (11/30/94)	\$3.2	\$-2.1
Net Change	\$3.0	\$1.8

Explanation of Change:

Schedule performance improvement was driven by successful completion of the First Engine To Test milestone and the continued intensive management efforts in drawing updates for engine hardware, hardware fabrication and development engine testing in the Growth Engine portion of the contract. The Air Vehicle Support portion of the contract, in support of the Comanche Air Vehicle, is on schedule. The Cost performance improvement in both portions of the contract is the result of manpower efficiencies and overall positive labor rates.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 52.2% (12 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 42.0% (\$2985.4 / \$7111.8)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY84-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	2985.4	199.1	298.6	3628.7	7111.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2985.4	199.1	298.6	3628.7	7111.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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				147.2	177.1	177.0	176.6	4.2
1990				215.2	269.3	268.9	260.0	4.1
1991				259.7	338.3	338.3	334.4	4.3
1992				380.4	509.3	508.8	506.9	3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1993				287.1	393.6	392.8	254.3	2.7
1994				260.2	365.2	364.7	300.2	2.0
1995				338.0	488.6	144.9	2.3	2.7
1996				133.6	199.1			3.0
1997				194.6	298.6			3.0
1998				188.7	298.3			3.0
1999				244.6	398.3			3.0
2000				253.3	424.8			3.0
2001				308.6	533.1			3.0
2002				365.3	650.0			3.0
2003				354.7	650.0			3.0
2004				211.9	400.0			3.0
2005				102.9	200.0			3.0
2006				37.1	74.2			3.0
Subtot	6			4683.8	7111.8	2639.4	2277.2	
Grand Total	6			4683.8	7111.8	2639.4	2277.2	

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Comanche (RAH-66), December 31, 1994

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) -- None.

b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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PROGRAM: SEN 21 CLASS/BSY-2

AS OF DATE: December 31, 1994

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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 P.E. Sullivan
National Center 3, Room 7N24	Assigned: February 24, 1995
FMS350	AV 332-7201 COMM 703-602-7201
Arlington, VA 22242-5168	
 AN/BSY-2 SCS PROGRAM MANAGER	 CAPT H.D. Hopkins
National Center 2, Room 11W88	Assigned: July 31, 1992
FMD418	AV 332-0056 COMM 703-602-0056
Arlington, VA 22242-5168	

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAR 30 1995

**DIRECTORATE FOR FREEDOM OF INFORMATION
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4. (U) Program Elements/Procurement Line Items:

RDTE&E:

PE 0604567N, 0603561N, 0603562N, 0603569N, 0603570N, 0604561N
PE 0604524N (Shared) Project S1347, S1941

PROCUREMENT:

APFN 1611 ICN 0204281N (Navy)
APFN 1810 ICN 0204283N (Navy) (Shared)
APFN 1810 ICN 0804731N (Navy) (Shared)
APFN 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:

The SEAWOLF submarine will be a multi-mission vessel that will introduce unprecedented performance capabilities. It will be the quietest, most heavily-armed attack submarine the Navy has ever built. The design of the SEAWOLF is based on an extensive research and development program and will incorporate technological advancements to provide: order of magnitude improvement in ship quieting; improved acoustic sensors; more capable combat systems; greater weapon capacity and capability; quieter launch; weapon launch at high ship speed; advanced reactor; improved performance machinery program; an advanced propulsor; increased operating depth; improved ship control; and enhanced survivability.

The SEAWOLF will have eight large-diameter torpedo tubes, and will hold significantly more weapons than any other U.S. nuclear attack submarine. A stronger hull material will enable deeper dives. In addition, the vessel will be configured for operation in Arctic

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SSN 21 CLASS/BSY-2, December 31, 1994

6. (U) Mission and Description (Cont'd):

areas.

The AN/BSY-2 Submarine Combat System supports the SSN 21 mission to conduct prompt and sustained combat operations. The AN/BSY-2 Submarine Combat System improves upon existing combat systems to meet the expanded operational requirements of attack 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. 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), Electronic Warfare, and Naval Special Warfare.

7. (U) Program Highlights:

- a. (U) Significant Historical Developments --
- 81 - An original Submarine Combat System program (SUBACS) was initiated.
- Jun 82 - GROUP TANGO was established to assess the need for an advanced technology submarine.
- Dec 82 - CNO directed NAVSEA to proceed with feasibility studies.
- Jun 83 - SECNAV approved the SSN 21 conceptual design.
- Jun 84 - SECDEF Decision Memorandum authorized the Navy to proceed with the SSN 21 Class preliminary design phase.
- May 85 - Preliminary design phase completed.
- Early 1986 - AN/BSY-2 design definition began with the award of contracts to RCA and IBM.
- Oct 86 - Milestone I (AN/BSY-2) approval.
- Oct 86 - Detail design was authorized.
- Apr 87 - Newport News Shipbuilding (NNS) obtained the lead design yard contract.
- Mar 88 - Original Program Baseline Document was approved.
- Mar 88 - Milestone II (AN/BSY-2) approval.
- Mar 88 - The AN/BSY-2 awarded General Electric (GE) a Full Scale Development (FSD) contract.
- Dec 88 - The AN/BSY-2 Limited Production (LP) option for SSN 21 system exercised.
- Jan 89 - Electric Boat (EB) was awarded the SSN 21 construction contract.
- Oct 89 - SSN 21 construction commenced.
- Jan 91 - A combined SSN 21 and AN/BSY-2 program review was held with the DAB. LRIP approved in February 1991.
- May 91 - EB was awarded SSN 22 construction. NNS filed suit.
- Jul 91 - The U.S. District Court Eastern District, VA declared SSN 22 construction contract void.
- Jan 92 - The SSN 21/AN/BSY-2 program was truncated after lead

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7a. (U) Program Highlights (Cont'd):

- ship. The proposed rescission package zeroed all FY 93 and outyear funding.
- Jun 92 - Public Law 102-298 reinstated the SSN 22. Contractors' stop work orders and terminations Request for Equitable Adjustments (REA) began to be submitted.
 - Jun 92 - SSN 22 ship construction stop work order was lifted.
 - Jul 92 - The U.S. District Court dismissed the case.
 - Sep 92 - SSN 22 construction commenced.
 - Sep 92 - An AN/BSY-2 program replan was executed to adjust the GE FSD/LP contract due to SEAWOLF Program truncation.
 - Nov 92 - EB submitted a REA for the SSN 22 stop work period.
 - Sep 93 - Settled SSN 22 REA for \$42M with a 12 month delay.
 - Nov 93 - Received direction to upgrade the second AN/BQG-5 to a full-up shipset, procure a third system, and develop Full Search Capability.
 - Dec 93 - AN/BQG-5 hardware delivered to SSN 710.
 - Feb 94 - Last major hull section for the SSN 21 was shipped from EB's Quonset Point, RI, facility to EB Division Groton, CT.

b. (U) Significant Developments Since Last Report —
SSN 21

- Apr 94 - Engine Room Erect was achieved for the SSN 21.
- May 94 - Pressure Hull Erect was achieved for the SSN 21.
- May 94 - The SSN 21 Acquisition Program Baseline was approved. Revision reflects the third ship and incorporates Arctic Mission Measures of Effectiveness.
- May 94 - Approximately one half of the SSN 21 crew reported and have completed their initial shipyard indoctrination training.
- May 1994 - Mold In Place Special Hull Treatment (MIP SHT) installation under shipyard conditions was successfully demonstrated on the SSN 762.
- Aug 94 - MIP SHT installation on the SSN 21 keel area commenced.
- Aug 94 - Congress placed a Shipbuilding and Conversion, Navy cost cap on the SSN 21 and SSN 22.
- Sep 94 - The SSN 21 crew stationed the first Watch section.
- Oct 94 - Cold Operations testing of the Reactor Plant commenced with Initial Fill of the Reactor Plant.

AN/BSY-2

AN/BSY-2 hardware, for delivery to the SSN 21, is complete and on schedule to meet shipyard delivery requirement.

Initial ship delivery software is in certification testing.

- Will complete March 1995.
- Will support shipyard construction testing in the Summer 1995.
- Is a fully capable software package, delivering all required

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SSN 21 CLASS/BSY-2, December 31, 1994

7b. (U) Program Highlights (Cont'd):

functionality for ship delivery.

AN/BQG-5 successfully completed its at sea performance evaluation in May 1994. This at sea success is a significant confidence builder since AN/BQG-5 Wide Aperture Array (WAA) uses 1/3 of BSY-2 software, 70% of BSY-2 acoustic hardware and identical displays and architecture.

- WAA detection, tracking and range accuracy met all performance expectations.
- USS Augusta (SSN 710) crew was pleased with improved Target Motion Analysis (TMA) displays using BSY-2 technology.
- System had NO INBOARD ELECTRONICS FAILURES in five weeks of intensive testing.

Contractual implementation of the BSY-2 Program Replan, which definitized Stop Work REA, was completed in August 1994.

THIS SYSTEM WILL SATISFY MISSION REQUIREMENTS.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the Approved Program Baseline dated May 26, 1994 and there are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
Delivery (First Ship)	MAY 95	MAY 96	MAY 96
Initial Operational Capability	MAY 95	MAY 96	MAY 96

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SSN 21 CLASS/BSY-2, December 31, 1994

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Intermediate Maintenance Activity (IMA) Ready for Operation	N/A	JUN 97	JUN 97(Ch-1)
Depot Maintenance Activity Ready for Operation	N/A	DEC 98	DEC 98(Ch-1)
Assign Homeport for 2 Ship Class	N/A	NOV 95	NOV 95(Ch-1)
Assign Intermediate Activity(IMA)	N/A	NOV 95	NOV 95(Ch-1)
Assign Depot Maintenance Activity AN/BSY-2	N/A	NOV 95	NOV 95(Ch-1)
System Design Definition Contract Award			
RCA Corporation	JAN 86	N/A	JAN 86
IBM Corporation	MAR 86	N/A	MAR 86
Milestone I (JRMB)	JUN 86	N/A	JUN 86
Milestone II	NOV 87	FEB 88	FEB 88
FSD Contract Award	JAN 88	N/A	MAR 88
Authorization for Limited Production (DAB)	DEC 89	N/A	DEC 89
Authorization for Limited Production (DAB)	DEC 91	N/A	JAN 91
Material Support Date (AN/BQG-5)	NOV 92	N/A	OCT 93
TECHEVAL (AN/BQG-5)	AUG 93	N/A	N/A
Material Support Date (AN/BSY-2)	NOV 93	N/A	MAY 95(Ch-2)
Authorization for Limited Production (DAB)	DEC 93	N/A	N/A
OPEVAL (AN/BQG-5)	MAR 94	N/A	N/A
(b)(1)			
AN/BSY-2 TECHEVAL (DT IIE)	DEC 94	N/A	FEB 99
Complete TECHEVAL (DT III)	DEC 94	N/A	N/A
AN/BSY-2 OPEVAL (OT IIC)	JUN 95	N/A	N/A
Complete OPEVAL (OT III)	JUN 95	N/A	TBD
Navy Support Date	JUL 96	N/A	N/A (Ch-3)

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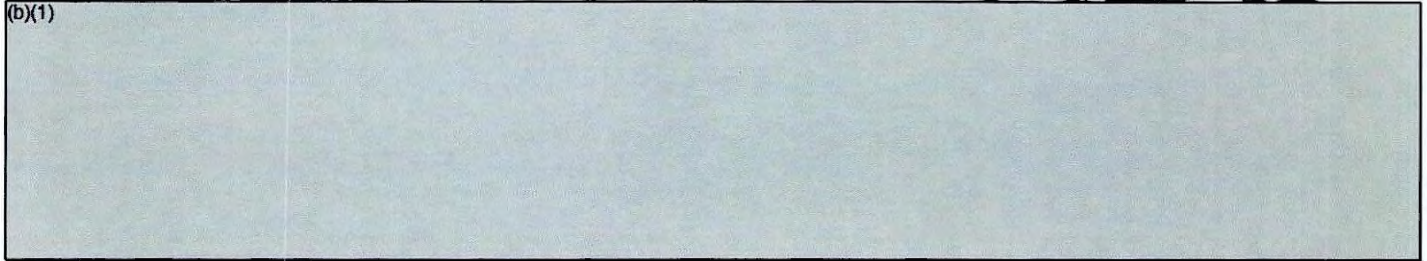
SSN 21 CLASS/BSY-2, December 31, 1994

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

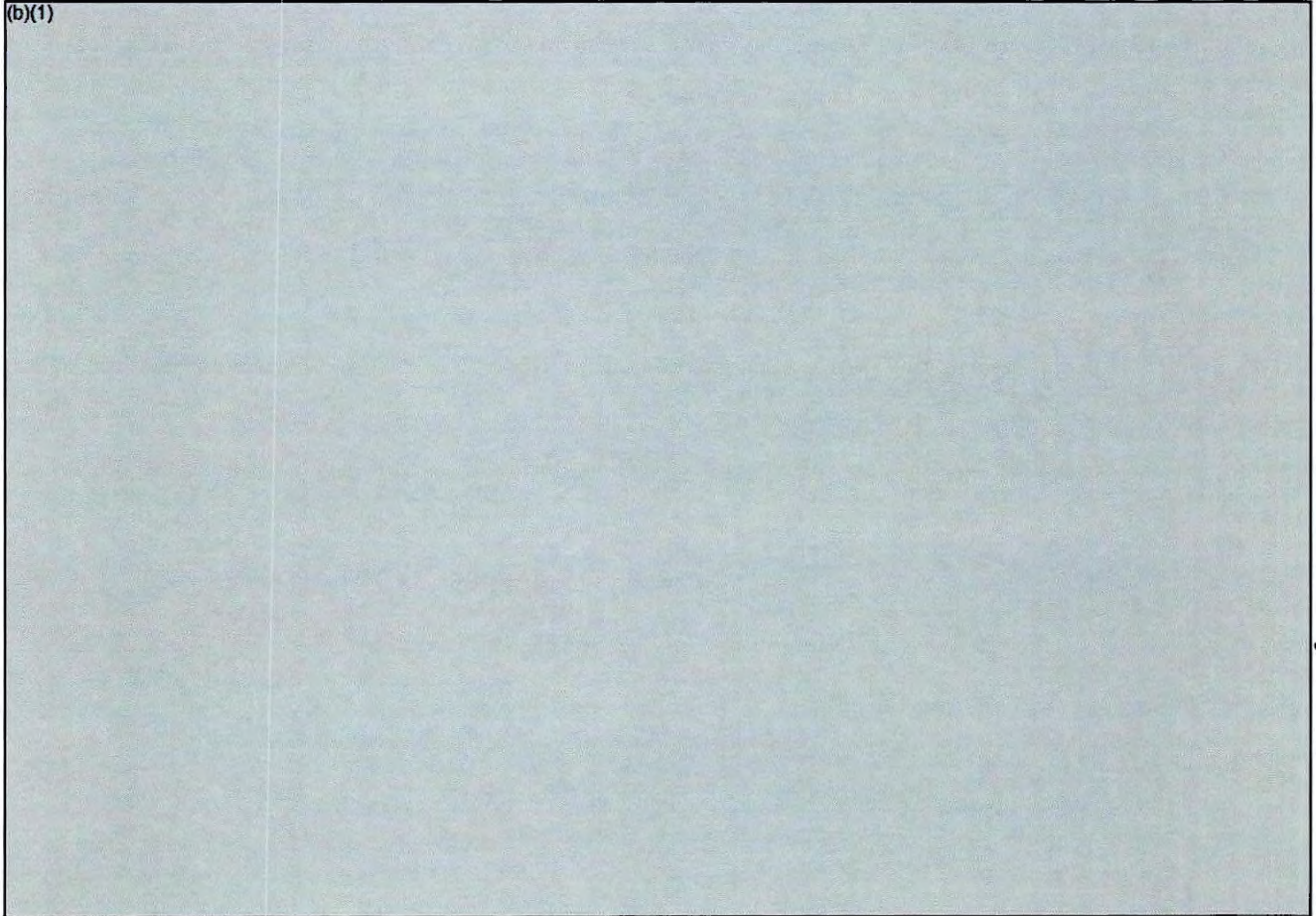
	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
EMSP			
SEM B First Tactical System Delivery	N/A	SEP 91	SEP 91
CCAPS			
PRODUCTION SYSTEM			

(b)(1)



b. (U) Previous Change Explanations --

(b)(1)



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9b.

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CCAPS program has been terminated.

c. (U) Current Change Explanations --

(b)(1)

CH-2: AN/BSY-2 Material Support Date changed from Feb 95 to May 95 to accommodate the material need date to the Navy Stock System.

CH-3: Navy Support Date changed from Jul 96 to N/A because no Navy organic repair support capability is planned.

(b)(1)

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 May 26, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
SSN-21 Submarine				
Length (ft)	353	N/A / N/A	353	353
Beam Max (ft)	40	N/A / N/A	40	40
Draft Nav (ft)	34	N/A / N/A	TBD	34
Displacement (tons)	9150	N/A / N/A	TBD	9150

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10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

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10a. (U) Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				

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SSN 21 CLASS/BSY-2, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				

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10a. (U) Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				

b. (U) Previous Change Explanations --

(b)(1)

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10b. ~~(S)~~ Performance Characteristics (Cont'd):
Warfare Intelligence Compendium (USWIC).

c. (U) Current Change Explanations --

(b)(1)

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 May 26, 1994.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	4335.0	4594.1	4608.4
Procurement	15686.3	7273.2	7541.3
Basic Ship Costs	(8083.6)		(4538.4)
GFE	(5952.8)		(2482.5)
Other Sailaway	(111.0)		(82.7)
OF/PD	(570.2)		(156.4)
Total Sailaway	(14717.6)		(7260.0)
OPN	(0.0)		(0.0)
AN/BSY-2 OPN	(968.7)		(281.3)
Total Other Wpn Sys	(968.7)		(281.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	98.6	27.5	25.1
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 90 Base-Year \$	20119.9	11894.8	12174.8

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11a. (U) Total Program Cost and Quantity (Cont'd):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1619.2	884.4	937.7
Development (RDT&E)	(-125.0)	(-19.5)	(-2.2)
Procurement	(1735.1)	(901.4)	(937.7)
Construction (MILCON)	(9.1)	(2.5)	(2.2)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	21739.1	12779.2	13112.5

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>12</u>	<u>3</u>	<u>3</u>
Total	12	3	3

c. (U) Foreign Military Sales/International Cooperative Programs --
None.

d. (U) Nuclear Costs -- \$1058.5M

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 May 26, 1994.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (MAY 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (FY90\$)	12174.8	11894.8	
(2) Quantity	3	3	
(3) Unit Cost	4058.27	3964.93	2.35

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY90\$)	7541.3	7273.2	
(2) Quantity	3	3	
(3) Unit Cost	2513.77	2424.40	3.69

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	4210.0	17421.4	107.7	21739.1
Previous Changes:				
Economic	-95.7	+478.2	+3.5	+386.0
Quantity	-	-15562.8	-	-15562.8
Schedule	-	+6354.0	-	+6354.0
Engineering	+144.8	-	-	+144.8
Estimating	+271.5	+590.6	-82.7	+779.4
Other	-	-	-	-
Support	+54.6	-986.9	-	-932.3
Subtotal	+375.2	-9126.9	-79.2	-8830.9
Current Changes:				
Economic	-3.1	36.3	-	+33.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	24.1	21.9	-1.2	+44.8
Other	-	-	-	-
Support	-	126.3	-	+126.3
Subtotal	+21.0	+184.5	-1.2	+204.3
Total Changes	+396.2	-8942.4	-80.4	-8626.6
Current Estimate	4606.2	8479.0	27.3	13112.5

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	4335.0	15686.3	98.6	20119.9
Previous Changes:				
Quantity	-	-12545.0	-	-12545.0
Schedule	-	+4369.6	-	+4369.6
Engineering	+127.8	-	-	+127.8
Estimating	+73.9	+695.9	-72.6	+697.2
Other	-	-	-	-
Support	+52.3	-781.9	-	-729.6
Subtotal	+254.0	-8261.4	-72.6	-8080.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	19.4	21.9	-0.9	+40.4
Other	-	-	-	-
Support	-	94.5	-	+94.5
Subtotal	+19.4	+116.4	-0.9	+134.9
Total Changes	+273.4	-8145.0	-73.5	-7945.1
Current Estimate	4608.4	7541.3	25.1	12174.8

b. (U) Previous Change Explanations --

RD&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
 (AN/BSY-2)
 Addition of Engineering Change Proposals
 Reinstatement of RD&E

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13b. (U) Cost Variance Analysis (Cont'd):

Support: Reduction of prior year funding
AN/BSY-2 Stop Work Order
AN/BSY-2 Team Trainer tactical equipment
reprogrammed from FY91 OPN
ISA 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
Restoration of SSN 22 (June 92)

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
Reestimates for SCA process
Corrections to original recission data
Adjustment for current & prior year inflation

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)

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13b. (U) Cost Variance Analysis (Cont'd):

Reinstatement of OPN 93-99 budget
Increase in OF/PD associated with reinstatement of
SSN 22

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)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>ROT&E</u>		
Revised escalation indices. (Economic)	N/A	-3.1
Adjustment for Current & Prior Inflation. (Estimating)	+1.4	+1.5
Refined Cost Estimates for SSN 21 & AN/BSY-2. (Estimating)	+18.0	+22.6
ROT&E Subtotal	<u>+19.4</u>	<u>+21.0</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+36.3
Adjustment for Current & Prior Inflation. (Estimating)	-37.2	-41.3
Rate adjustment for DBOF activities. (Estimating)	+0.2	+0.3
Refined program requirements for SSN 23. (Estimating)	-7.2	-9.2
Revised Outfitting and Post Delivery requirements (Estimating)	+9.2	+14.3
Reestimates for SSN 21, SSN 22 and SSN 23 SCA process. (Estimating)	+56.9	+57.8
Adjustment for Current & Prior Inflation. (Support)	+0.1	+0.1
Revised OPN costs. (Support)	+94.4	+126.2
Procurement Subtotal	<u>+116.4</u>	<u>+184.5</u>
(3) <u>MILCON</u>		
Deletion of Requirement for Project 008 - for AN/BSY-2. (Estimating)	-0.9	-1.2

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SSN 21 CLASS/BSY-2, December 31, 1994

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1811.6	139.7	247.2	2118.0	48.3	274.7	—	-268.7	2559.2	4370.8

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E —

(U) AN/BSY-2 FSD:

MARTIN MARIETTA CORP., SYRACUSE, NY

N00024-88-C-6150, FPFF

Award: December 11, 1987

Definitized: December 11, 1987

Initial Contract Price

Target Ceiling Qty

\$965.5 \$1097.7 2

Current Contract Price

Target Ceiling Qty
\$1052.3 \$1196.4 2

Estimated Price At Completion

Contractor Program Manager
\$1133.9 \$1135.4

Cost Variance Schedule Variance

Previous Cumulative Variances \$-11.7 \$-5.1
Cumulative Variances To Date (09/25/94) \$-25.3 \$-5.4
Net Change \$-13.6 \$-0.3

Explanation of Change:

The unfavorable \$13.6M change in cost variance is primarily attributed to increased software test and integration, and firmware development and integration costs. The unfavorable \$0.3M change in schedule variance is not significant. The Program Manager's estimated price at completion increased by \$17.0M since the last SAR based on a bottom up review of work remaining and represents a more conservative level of software integration efficiency.

Note: The initial and current contract prices and estimated prices at completion do not include the \$37.9M performance incentive fee pool. Option Items 0039, 0001-0018 and 0031 have been exercised and are included in the current contract prices.

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SSN 21 CLASS/BSY-2, December 31, 1994

15. (U) Contract Information (Cont'd):

b. (U) Procurement --
(U) SSN21 CONSTRUCTION:
GENERAL DYNAMICS, GROTON, CT
N00024-89-C-2000, FPIF
Award: January 9, 1989
Definitized: January 9, 1989

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1055.3	\$1296.2	1	\$1245.1	\$1288.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-62.7	\$-23.8
Cumulative Variances To Date (10/01/94)	\$-121.3	\$-62.4
Net Change	\$-58.6	\$-38.6

Explanation of Change:

All numbers include anticipated escalation.

The change in cost variance since last year is attributable to the following factors: material availability, labor hour performance (Outside Electricians, Outside Machinists, and Pipefitters, etc.), and the effects of the shrinking shipbuilding industry. The change in schedule variance is attributable to the offloading of work from Quonset Point to Groton and material. The Program Manager, Design Yards and the Shipbuilder continue to aggressively resolve design and material issues to support the construction program. As the SSN 21 approaches delivery, work arounds are more difficult. Work arounds are also hindered by the Congressionally mandated cost cap placed on the SSN 21 and SSN 22. As of today, 20 of the 20 scheduled major milestones have been completed.

(U) <u>SSN21 DETAIL DESIGN:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
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			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$555.5	N/A	0	\$716.9	\$723.1

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SSN 21 CLASS/BSY-2, December 31, 1994

15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-157.7	\$-19.5
Cumulative Variances To Date (10/23/94)	\$-185.1	\$-14.4
Net Change	\$-27.4	\$5.1

Explanation of Change:

The increase in the negative cost variance is due to the high demand of complex drawings to support an intense shipbuilding program. The improvement in the schedule variance is due to the increased efforts between the Design Agents, the Shipbuilder and the Government to ensure that drawings are delivered to support the Shipbuilder's construction schedule.

(U) <u>SSN21 (NUCLEAR):</u> Westinghouse Elec Corp, Monroeville, PA N00024-87-C-4000, CPFF Award: November 7, 1986 Definitized: November 7, 1986	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$70.2	N/A	0

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$252.1	N/A	0	\$260.0	\$260.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
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.

(U) <u>SSN21 (NUCLEAR):</u> Westinghouse Elec Corp, Schenectady, NY N00024-87-C-4001, CPFF Award: November 7, 1986 Definitized: November 7, 1986	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$88.0	N/A	0

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$299.9	N/A	0	\$300.0	\$300.0

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SSN 21 CLASS/BSY-2, December 31, 1994

15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
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 procurements.

(U) SSN22 CONSTRUCTION: GENERAL DYNAMICS, GROTON, CT N00024-91-C-2902, FPIF Award: May 3, 1991 Definitized: May 3, 1991	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$610.2	\$758.3	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$872.0	\$1031.6	1	\$1002.5	\$1030.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-8.0	\$5.6
Cumulative Variances To Date (10/01/94)	\$-37.2	\$-17.5
Net Change	\$-29.2	\$-23.1

Explanation of Change:

All numbers include anticipated escalation.

The change in cost variance since the last year is primarily material cost and schedule increases attributable to surplus material. Qualification, noise, and test delays on SSN 21 have impacted material requirements for SSN 22. In addition, a valve vendor REA claim has affected schedule variance due to potential valve delivery delays of over one year. The Program Manager is evaluating these impacts and has determined some surplus material will be sellable to other programs resulting in a decrease when ultimately dispositioned.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 68.2% (15 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 83.5% (\$10949.8 / \$13112.5)

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SSN 21 CLASS/BSY-2, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY81-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RDT&E	4282.4	126.8	114.3	82.7	4606.2
Procurement	6640.1	1531.0	85.2	222.7	8479.0
MILCON	27.3	-	-	-	27.3
O&M	-	-	-	-	-
Total	10949.8	1657.8	199.5	305.4	13112.5

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	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
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	509.2	4.2

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SSN 21 CLASS/BSY-2, December 31, 1994

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)

1990				518.5	530.8	530.7	529.2	4.0
1991				517.2	548.6	547.7	534.8	4.3
1992				407.6	445.1	445.1	421.8	2.8
1993				157.6	176.3	171.4	111.5	2.7
1994				159.4	182.6	91.8	7.7	2.0
1995				133.2	158.1			2.7
1996				104.5	126.8			3.0
1997				91.5	114.3			3.0
1998				36.7	47.2			3.0
1999				26.8	35.5			3.0
Subtot				4608.4	4606.2	4027.2	3841.3	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1987				376.4	375.0	375.0	355.3	1.5
1988				251.2	257.6	257.6	256.4	2.6
1989	1		2387.3	2098.9	2214.8	1932.2	1637.6	3.3
1990		355.5		540.3	586.3	586.3	512.2	1.1
1991	1	124.3	2149.4	1983.5	2217.3	1779.0	1072.4	1.6

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SSN 21 CIASS/BSY-2, December 31, 1994

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	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1992		191.5		671.8	774.9	547.7	193.9	2.5
1993				1.9	2.2	1.8	0.7	3.2
1994				15.2	18.3	0.4	0.3	4.1
1995				12.6	15.6			2.7
1996	1		2052.0	1195.8	1526.0			3.0
1997				27.5	36.1			3.0
1998				16.2	21.9			3.0
1999				19.4	27.0			3.0
2000				9.3	13.4			3.0
2001				7.8	11.5			3.0
2002				32.2	49.0			3.0
Subtot	3	671.3	6588.7	7260.0	8146.9	5480.0	4028.8	

Nonrecurring Flyaway includes \$671.3M for ships in FY 92, FY 93, and FY 94 which were not authorized.

Appropriation: 1810 Other Procurement, Navy

1989				0.6	0.6	0.6	0.6	4.2
1990				142.2	152.2	152.2	149.8	4.0

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SSN 21 CLASS/BSY-2, December 31, 1994

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: 1810 Other Procurement, Navy (Cont'd)

1991				17.8	19.4	19.4	10.9	4.3
1992								2.8
1993								2.7
1994				3.2	3.8	3.7		2.0
1995				1.7	2.1	0.2		2.7
1996				4.0	5.0			3.0
1997				38.3	49.1			3.0
1998				23.3	30.8			3.0
1999				37.7	51.3			3.0
2000				5.9	8.3			
2001				6.6	9.5			
Subtot				281.3	332.1	176.1	161.3	

Appropriation: 1205 Military Construction, Navy

1991				25.1	27.3	19.0	13.0	4.3
Subtot				25.1	27.3	19.0	13.0	
Grand Total	3	671.3	6588.7	12174.8	13112.5	9702.3	8044.4	

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SSN 21 CLASS/BSY-2, December 31, 1994

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) — None.
- b. (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.

- 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&M or industrial fund contractor support costs.

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~~FOUO-111~~SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: T-AO 187 OILER

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

T-AO 187 CLASS FLEET OILER

2. DoD Component: Navy3. Responsible Office and Telephone Number:

Naval Sea Systems Command (PMS325) CAPT R.E. Williams USN
 Zachary Taylor Building (NC#3) Assigned: September 14, 1994
 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:

None.

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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 Shipbuilding, Inc. (TSI) to complete construction of T-AOs 191 and 192. The contract was definitized on 29 JUN 90 and terminated for default on 25 AUG 93. PENN SHIP and AII negotiated a transfer agreement to complete construction of T-AOs 194/196 on 16 JUN 88. The ships 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. The last of these ships was delivered on 6 JUL 90.

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 200/202/204) was exercised on 6 OCT 88 and for the second flight (T-AOs 199/201/203) on 24 MAR 89. T-AOs 198/200/199 were delivered on 21 MAY 92, 25 SEP 92, and 8 FEB 93,

7a. Program Highlights (Cont'd):

respectively. On 16 SEP 92, AII received a maximum price modification to double hull the last three ships (T-AOs 201/203/204). The Best Estimated Delivery Dates (BEDDs) for these ships are: T-AO 201 (21 JUN 95), T-AO 204 (7 NOV 95), and T-AO 203 (5 APR 96).

(b)(4)

On 30 DEC 93, Navy and AII reached a settlement on the REAs. The settlement resolved AII's near term cash flow problem and improved the Company's long term financial outlook.

(b)(4)

On 19 OCT 94, SECNAV declared T-AO 191/192 in excess of requirements, thus reducing the total program quantity from 18 to 16 ships. The ships were mothballed and delivered to the James River, National Defense Reserve Fleet (NORF).

On 10 NOV 94, the double hull modification for the last three ships was definitized (T-AO 201/203/204), converting the contract to firm fixed price (FFP). As a result, the contract delivery dates are: T-AO 201 (JUL 95), T-AO 204 (JAN 96), and T-AO 203 (JUN 96).

This is the final SAR based on 90% expenditure of funds.

This system will satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no breaches to the Approved Program Baseline (APB) dated 4 JAN 93 and no Nunn-McCurdy unit cost breaches.

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T-AO 187 OILER, December 31, 1994

9. Schedule:

a. Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
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

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. The delay from NOV 94 to APR 96 was due to the double-hulling of the last three ships.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

NDCP #S0859 approved December 7, 1981.

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T-AO 187 OILER, December 31, 1994

9d. Schedule (Cont'd):

Approved Program:

NAE Approved Acquisition Program Baseline dated January 04, 1993.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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 December 7, 1981.

Approved Program:

NAE Approved Acquisition Program Baseline dated January 04, 1993.

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T-AO 187 OILER, December 31, 1994

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	2594.9
Sailaway	(2518.4)		(2500.5)
Post Delivery			(26.7)
Outfitting			(67.7)
Total Sailaway	(2518.4)		(2594.9)
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	0.0	0.0
Total FY 84 Base-Year \$	2607.7	2653.1	2610.3
Escalation	583.0	283.2	297.5
Development (RDT&E)	(0.4)	(-0.6)	(-0.7)
Procurement	(582.6)	(283.8)	(298.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	3190.7	2936.3	2907.8
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	17	18	16
Total	17	18	16
c. Foreign Military Sales/International Cooperative Programs --	None.		
d. Nuclear Costs --	None.		
e. References --			

Production Estimate:

NDCP #S0859 approved December 7, 1981.

Approved Program:

NAE Approved Acquisition Program Baseline dated January 04, 1993.

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T-AO 187 OILER, December 31, 1994

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY84\$)	2610.3	2653.1	
(2) Quantity	16	18	
(3) Unit Cost	163.14	147.39	10.69
b. Procurement			
(1) Cost (BY84\$)	2594.9	2637.8	
(2) Quantity	16	18	
(3) Unit Cost	162.18	146.54	10.67

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T-AO 187 OILER, December 31, 1994

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	-0.1	-150.5	-	-150.6
Quantity	-	+177.6	-	+177.6
Schedule	-	-65.9	-	-65.9
Engineering	-	-	-	-
Estimating	-1.4	-96.4	-	-97.8
Other	-	-	-	-
Support	-	-138.0	-	-138.0
Subtotal	-1.5	-273.2	-	-274.7
Current Changes:				
Economic	-	27.2	-	+27.2
Quantity	-	-377.6	-	-377.6
Schedule	-	51.8	-	+51.8
Engineering	-	-	-	-
Estimating	-	290.4	-	+290.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-8.2	-	-8.2
Total Changes	-1.5	-281.4	-	-282.9
Current Estimate	14.7	2893.1	-	2907.8

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T-AO 187 OILER, December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RD&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	-1.1	-65.4	-	-66.5
Other	-	-	-	-
Support	-	-73.5	-	-73.5
Subtotal	-0.4	+13.6	-	+13.2
Current Changes:				
Quantity	-	-294.7	-	-294.7
Schedule	-	6.9	-	+6.9
Engineering	-	-	-	-
Estimating	-	277.2	-	+277.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-10.6	-	-10.6
Total Changes	-0.4	+3.0	-	+2.6
Current Estimate	15.4	2594.9	-	2610.3

b. Previous Change Explanations --

RD&E

Engineering: Higher RD&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

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T-AO 187 OILER, December 31, 1994

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) Procurement

Revised escalation indices. (Economic)	N/A	+3.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+23.7
Total Variance associated with decrease of 2 ships from 18 to 16.	-255.3	-327.1
- Quantity Variance resulting from decrease of 2 ships. (Quantity)	-294.7	-377.6
- Schedule Variance resulting from quantity decrease. (Schedule)	+6.9	+20.3
- Estimating Variance resulting from quantity decrease. (Estimating)	+32.5	+30.2
- Change in annual procurement buy profile from FY85 to FY89. (Schedule)	--	+31.5
- Adjustment for Current & Prior Inflation. (Estimating)	-3.0	-3.5
- Revised program estimate resulting from a decrease of 2 ships. (Estimating)	+247.7	+263.7

Procurement Subtotal	<u>-10.6</u>	<u>-8.2</u>
----------------------	--------------	-------------

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
187.688	-7.713	-0.769	-0.881	--	12.038	--	-8.625	-5.950	181.738

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T-AO 187 OILER, December 31, 1994

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --
 T-AO 198-204:
 AVONDALE INDUSTRIES, INC., NEW ORLEANS, LA
 N00024-88-C-2050, FFP
 Award: June 20, 1988
 Definitized: June 20, 1988

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$97.6	N/A	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$901.2	N/A	7	\$893.4	\$901.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-65.9	\$-14.1
Cumulative Variances To Date (12/31/94)	\$-41.7	\$-2.1
Net Change	\$24.2	\$12.0

Explanation of Change:

On 10 NOV 94, the contract was converted to a firm fixed price (FFP), thus the target price reflects the firm fixed price. Improvements in the COST and SCHEDULE variances are due to the release of management reserve to budget, a reduction in the shipbuilder's labor hour estimate, and a change from Base Year to Then Year dollars in the monthly Cost Performance Reports (CPR). The monthly shipbuilder reports will now reflect the firm fixed price in Then Year dollars.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 87.5% (14 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 99.7% (\$2898.8 / \$2907.8)

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T-AO 187 OILER, December 31, 1994

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY82-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RD&E	14.7	-	-	-	14.7
Procurement	2884.1	6.3	2.7	-	2893.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2898.8	6.3	2.7	-	2907.8

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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
Subtot				15.4	14.7	14.7	14.7	

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T-AO 187 OILER, December 31, 1994

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: 1611 Shipbuilding and Conversion, Navy

1982	1		171.1	171.1	173.5	173.5	171.7	7.5
1983	1		134.2	134.2	138.3	138.0	136.6	3.8
1984	2		260.3	260.3	273.6	272.1	269.5	3.6
1985	1		552.7	552.7	592.5	580.1	572.0	2.1
1986	2		250.7	250.7	275.0	267.9	262.5	1.4
1987	2		252.3	238.9	268.0	261.4	256.8	1.5
1988	2		233.9	227.7	262.9	244.3	239.3	2.6
1989	5		739.7	692.9	823.2	752.6	750.7	3.3
1990				13.3	16.2	14.6	13.4	1.1
1991				17.1	21.5	21.5	13.1	1.6
1992				13.2	17.1	17.1	9.0	2.5
1993				9.6	12.6	5.9	4.2	3.2
1994				3.6	4.9	0.7	0.2	4.1
1995				3.4	4.8			2.7
1996				4.4	6.3			3.0
1997				1.8	2.7			3.0
Subtot	16		2594.9	2594.9	2893.1	2749.7	2699.0	
Grand								

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

Total	16		2594.9	2610.3	2907.8	2764.4	2713.7	
-------	----	--	--------	--------	--------	--------	--------	--

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RD&E

Procurement

To Date

0/0

13/13

b. 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 FY93 Actuals, five-year maintenance cost averages, and the FY94 approved expenses.

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T-AO 187 OILER, December 31, 1994

18b. Operating and Support Costs (Cont'd):

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	4.5	2.9
Direct Operations	3.3	3.1
Direct Maintenance	2.2	3.1
Indirect Costs	1.0	0.4
Total	11.0	9.5

c. Contractor Support Costs -- None.

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94 019

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: F-22

AS OF DATE: December 31, 1994

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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

MAJ GEN ROBERT F. RAGGIO

Assigned: July 1, 1992

AV 785-4167 COMM (510) 255-1100

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

SAF/PAS

95-190 -7

CLEARED
FOR OPEN PUBLICATION
AS AMENDED

MAR 10 1995 18

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

~~Classified by: F-22, 060, 10, 000, 00~~

~~Declassify on: Originality Agency Determination Required (OADR)~~

~~Downgrade instructions: Not subject to automatic downgrade~~

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OATSD (PA) DFOISR 95-C-0626

F-22, December 31, 1994

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 3010 ICN ATF000 (Air Force)

MILCON:

PE 0207219F, 0604239F

NOTE: PE 0604239F is the only RDT&E program element with funding after FY 91. PE 0207219F is the procurement program element. 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 2000s to counter emerging proliferating world-wide 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) 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 nine EMD flight test vehicles (seven single and two dual seat); design, fabrication, development testing, and delivery of 27 EMD flight qualified engines; update of the Dem/Val Avionics Flying Laboratory into a Flying Test Bed for use in developing and integrating the EMD avionics suite; and design and development of F-22 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, a 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) Demonstration/Validation phase involved two competing aircraft teams, led by Lockheed (with General Dynamics and Boeing as team members) and Northrop (teamed with McDonnell-Douglas), and two competing engine contractors, General Electric (GE) and Pratt & Whitney (P&W). Each aircraft team flew two prototype air vehicles--one with GE engines and the other with P&W engines. On 23 April 1991, the Secretary of the Air Force announced the winners of the ATF Engineering and Manufacturing Development (EMD) Source Selection: Lockheed Aeronautical Systems Company (LASC) for the air vehicle and overall weapon system integration and P&W for the engine. In conjunction with the selection, the ATF was redesignated the F-22. Milestone II approval was confirmed by an

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F-22, December 31, 1994

7a. (U) Program Highlights (Cont'd):

Acquisition Decision Memorandum (ADM), dated 1 August 1991, authorizing F-22 EMD and long lead procurement for four pre-production verification (PPV) air vehicles. EMD contracts were awarded to LASC and P&W on 2 August 1991. In December 1992, Lockheed Aeronautical Systems Group, parent company of LASC, acquired General Dynamics' Fort Worth Division, which was renamed Lockheed Fort Worth Company (LFWC). In FY93, a combination of government and contractor funding shortfalls led to a rephase of the F-22 program. This rephase reduced the number of EMD aircraft from eleven to nine and the number of engines from 33 to 27. In addition, the EMD program schedule slipped twelve months and the production program slipped one fiscal year. The Air Vehicle Preliminary Design Review (PDR) was completed on 30 April 1993. Further funding reductions led to a second rephase of the program in FY94, slipping the EMD and production programs an additional eight months.

b. (U) Significant Developments Since Last Report -- The second rephase of the F-22 Engineering and Manufacturing Development (EMD) program, driven by an FY94 Congressional cut of \$163M and an FY95 Department of Defense (DOD) cut of \$100M, was definitized with Pratt & Whitney (P&W) in October and Lockheed Aeronautical Systems Company (LASC) in December. As indicated in the December 1993 SAR, this rephase led to a three month slip in Air Vehicle Critical Design Review (CDR), an eight month slip in first flight and subsequent EMD milestones, and a one year slip in pre-production verification (PPV) and subsequent production. It also incorporated the decision, driven by the DOD Bottom Up Review, to reduce the F-22 total production quantity from 648 to 442. This rephase resulted in increasing EMD by \$570M (TY\$) and production by \$1.5B (TY\$). Further F-22 funding cuts -- a \$110M Congressional reduction in FY95 and an announced \$200M DOD reduction in FY96 -- are expected to force a third program rephase. Based on past rephase experience, we estimate first flight will slip three months and all subsequent milestones will slip six months. The resulting cost increase to the EMD program is currently being assessed and will be reflected in future program documentation. We are currently anticipating no cost impact to the production program, contingent on obtaining funding payback within the FYDP.

The design continued to mature and a number of technical challenges were addressed in preparation for Air Vehicle CDR. F119 engine development and testing of a redesigned turbine, intended to address fuel consumption inefficiencies and a durability shortfall, continued throughout the year. An Executive Independent Review Team validated the design approach and reviewed test results, which have so far indicated that the redesign will recover the turbine performance shortfalls. Final turbine testing is scheduled for the summer of

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7b. (U) Program Highlights (Cont'd):

1995. Air vehicle design changes were also successfully incorporated to improve Radar Cross Section (RCS), which newly developed tools and model measurements had shown would miss some specification points. During the final quarter the team revamped the air vehicle weight estimating and control process in response to unexpected weight growth of several hundred pounds. With the incorporation of most assessments of possible growth into the current estimate, design weight has stabilized at a level approximately 1000 lbs above that reported in the December 1993 SAR. We have very high confidence that further EMD growth can be avoided as we adhere to the weight control process and identify additional weight reduction options.

Through December, 208 of the 211 hardware and software CDRs required for the February 1995 Air Vehicle CDR had been held. CDRs conducted in 1994 included Vehicle Management System, Armament, Cockpit, and Avionics. All subsystem CDRs have been of very high quality, and the Air Vehicle CDR is now on schedule for 20 February 1995.

The SPO received direction to integrate a 1000 lb Joint Direct Attack Munition (JDAM) capability in response to a requirement to exploit the F-22's inherent air-to-ground capability. This capability will be incorporated on the first production article.

We also conducted a study that reviewed current requirements and specifications by projecting F-22 aero performance and effectiveness against the latest assessment of current and future threats. Proposed updates to the Operational Requirements Document (ORD) and contract specifications are in coordination within the Air Force. The updates are expected to define the performance levels necessary to meet and defeat what is currently known about potential threats and avoid spending scarce resources attempting to attain performance levels that do not contribute to overall combat effectiveness.

In compliance with Congressional direction, we are supporting several independent studies of the F-22 program. These include an Air Force Scientific Advisory Board assessment of Electronic Combat (EC) effectiveness testing, a National Academy of Sciences study of the desirability of waiving requirements for full-up Live Fire Test, and parallel Defense Science Board and General Accounting Office reviews of concurrency risk. All these reviews are scheduled for completion during the first half of 1995.

Planning for F-22 Development Test & Evaluation (DT&E) and Operational Test & Evaluation (OT&E) continues. Update of the Test and Evaluation Master Plan (TEMP) is delayed pending approval of the ORD and resolution of Congressionally mandated EC effectiveness, Live Fire Test and Evaluation, and F-22/F-15 Comparison Test studies.

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7b. (U) Program Highlights (Cont'd):

The F-22 as currently planned will meet its mission requirements.

c. (U) Changes Since As Of Date --

The final subsystem CDR, Utilities and Subsystems, was held 18-19 January 1995. The Air Vehicle CDR was held as scheduled on 20-24 February, and all 211 required CDRs have now been held. The review was a comprehensive assessment of the F-22's design maturity and initial production readiness, culminating the series of subsystem CDRs and initial production readiness reviews that began in November 1993. The review validated the significant progress made since Preliminary Design Review and verified the air vehicle's readiness to proceed toward first flight. Several minor action items remain open after CDR. Keeping with the same discipline we exercised with subsystem CDRs, the Air Vehicle CDR will remain open until mid June, when all action items are expected to close.

8. (U) Threshold Breaches:

There are no breaches to the DAE approved Acquisition Program Baseline dated 15 June 1994, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
RMD Contract Award	AUG 91	AUG 91	AUG 91
Preliminary Design Review Complete	OCT 92	APR 93	APR 93
Critical Design Review Complete	OCT 93	FEB 95	FEB 95
Engine Initial Flight Release	OCT 94	DEC 96	DEC 96
PPV Long Lead	JAN 95	AUG 96	DEC 96 (Ch-1)
First Flight	SEP 95	FEB 97	FEB 97
DT&E			
Start	SEP 95	FEB 97	FEB 97
Complete	DEC 99	MAR 01	MAR 01

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
PFV Contract Award	JAN 96	SEP 97	JAN 98 (Ch-1)
Low Rate Initial Production (LRIP) Decision	OCT 96	JUN 98	OCT 98 (Ch-1)
Low Rate Production Contract Award	JAN 97	SEP 98	JAN 99 (Ch-1)
LRIP First Delivery	JAN 99	SEP 00	JAN 01 (Ch-1)
Dedicated IOT&E Start	JUN 99	MAR 01	MAR 01
Complete	SEP 99	NOV 01	NOV 01
Milestone III	DEC 99	MAR 02	JUL 02 (Ch-1)
High Rate Production Contract Award	JAN 01	APR 02	AUG 02 (Ch-1)
Initial Operational Capability	TBD	MAY 04	SEP 04 (Ch-1)
Organic Organizational Maintenance Capability	TBD	MAY 04	SEP 04 (Ch-1)
Required Assets Availability (RAA)	OCT 02	MAY 04	SEP 04 (Ch-1)
Organic Depot Activation	TBD	JUN 06	OCT 06 (Ch-1)

PFV Long Lead and subsequent milestones will slip if the program is rephased in 1995 due to funding reductions. Specifics of the potential rephase are currently under evaluation.

b. (U) Previous Change Explanations --

Air Combat Command (ACC) determined the original Approved Program dates for Initial Operational Capability (OCT 02) and Organic Organizational Maintenance Capability (OCT 02). These were first reported in the December 1992 SAR.

The original Approved Program date for Organic Depot Activation (OCT 05), first reported in the December 1992 SAR, reflected the coordinated position of the F-22 SPO and the depot organization (SM-ALC).

The Current Estimates for Preliminary Design Review Complete through Required Assets Availability were updated in the December 1992 SAR to reflect the impacts of the 1993 program rephase.

The Approved Program dates for Critical Design Review Complete and all subsequent milestones were slipped eight months to reflect the impacts of the 1994 rephase. The Current Estimates in the December 1993 SAR accounted for these impacts.

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F-22, December 31, 1994

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

Beginning with PPV Long Lead, production-related milestones have slipped four months, reflecting the FY96 Program Objective Memorandum's movement of the first F-22 production funding from FY96 to FY97.

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 June 15, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

Combat Radius (at
optimum altitude) (nm)

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
Mean Time Between Maintenance (MTBM) (hrs)	3.0	3.0 / 3.0	N/A	3.4	(Ch-1)
USD(A) Risk Assessment Items:					
Mission Effective- ness (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	7.6	

(b)(1)

~~(b)(1)~~ * Classification/control is beyond the level of this document.

(b)(1)

Current Estimate is better than threshold.

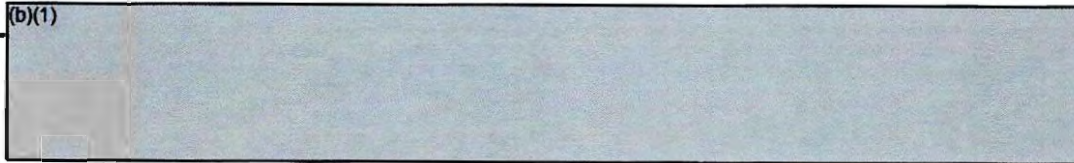
A mission scenario was assumed for estimating purposes. The current estimate will be updated when the scenario is refined.

USD(A) Risk Assessment Items are included here for consistency with the MS II APB. While these items may provide some insight to program

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10a.



b. (U) Previous Change Explanations --

Current Estimates in the December 1992 SAR were set equal to the threshold values, as the program had just entered the development phase. Changes to the Current Estimates between December 1992 and December 1993 were based on development data not previously available.

c. (U) Current Change Explanations --

(Ch-1) The Current Estimates noted here reflect estimates based on development data not previously available. For instance, the Current Estimate for Weight Empty is based on Weight Status Report (WSR) #143, dated 23 Dec 94.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated 3 February 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated June 15, 1994.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	16560.0	16560.0	16896.7
Procurement	43510.0	32566.1	32564.5
Airframe	(21485.7)		(15804.8)
Engines	(5993.7)		(4640.8)
Avionics	(9250.6)		(6624.2)
Total Nonrecurring			(0.0)
Total Flyaway	(36730.0)		(27069.8)
Other Weapon Systems	(1032.1)		(1067.2)
Peculiar Support	(1896.1)		(1829.0)
Initial Spares	(3851.8)		(2598.5)
Construction (MILCON)	200.0	200.0	121.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	60270.0	49326.1	49582.2

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11a. (U) Total Program Cost and Quantity (Cont'd):

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	38839.0	23038.8	23938.9
Development (RDT&E)	(2969.0)	(2969.0)	(2629.8)
Procurement	(35762.0)	(19961.8)	(21242.3)
Construction (MILCON)	(108.0)	(108.0)	(66.8)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	99109.0	72364.9	73521.1

The current estimate reflects FY95 and FY96 funding reductions but does not reflect out-year cost and schedule impacts of these cuts. The program office and contractor teams are currently evaluating the impact of those reductions.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>648</u>	<u>442</u>	<u>442</u>
Total	648	442	442

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 9 from the Current Estimate that are not considered fully configured.

Note: Only FY97 long lead items for four Pre-Production Verification (PPV) aircraft are approved at this time in the Acquisition Decision 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.

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 June 15, 1994.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	49582.2	49326.1	
(2) Quantity	442	442	
(3) Unit Cost	112.18	111.60	0.52
b. (U) Procurement			
(1) Cost (BY90\$)	32564.5	32566.1	
(2) Quantity	442	442	
(3) Unit Cost	73.68	73.68	0.00

The current estimate reflects FY95 and FY96 funding reductions but does not reflect out-year cost and schedule impacts of these cuts. The program office and contractor teams are currently evaluating the impact of those reductions.

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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	19529.0	79272.0	308.0	99109.0
Previous Changes:				
Economic	-182.5	-3571.9	-22.9	-3777.3
Quantity	-483.1	-21543.0	-	-22026.1
Schedule	+32.4	+1350.1	-	+1382.5
Engineering	+187.4	+103.5	-	+290.9
Estimating	-206.2	+143.4	-101.5	-164.3
Other	-	-	-	-
Support	+2.4	-3226.2	-	-3223.8
Subtotal	-649.6	-26744.1	-124.4	-27518.1
Current Changes:				
Economic	-39.5	-276.8	4.1	-312.2
Quantity	-	-	-	-
Schedule	-	1297.0	-	+1297.0
Engineering	-	-	5.0	+5.0
Estimating	686.6	69.7	-4.9	+751.4
Other	-	-	-	-
Support	-	189.0	-	+189.0
Subtotal	+647.1	+1278.9	+4.2	+1930.2
Total Changes	-2.5	-25465.2	-120.2	-25587.9
Current Estimate	19526.5	53806.8	187.8	73521.1

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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	-424.1	-9891.2	-	-10315.3
Schedule	+17.0	+101.1	-	+118.1
Engineering	+146.6	+64.4	-	+211.0
Estimating	+44.1	+29.2	-80.4	-7.1
Other	-	-	-	-
Support	+45.3	-1247.7	-	-1202.4
Subtotal	-171.1	-10944.2	-80.4	-11195.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	4.0	+4.0
Estimating	507.8	36.3	-2.6	+541.5
Other	-	-	-	-
Support	-	-37.6	-	-37.6
Subtotal	+507.8	-1.3	+1.4	+507.9
Total Changes	+336.7	-10945.5	-79.0	-10687.8
Current Estimate	16896.7	32564.5	121.0	49582.2

The current estimate reflects FY95 and FY96 funding reductions but does not reflect out-year cost and schedule impacts of these cuts. The program office and contractor teams are currently evaluating the impact of those reductions.

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices and economic adjustment for negative program change.
Quantity: Deleted 2 KMD aircraft and 6 KMD engines due to FY 93 funding shortfall.
Schedule: Program rephase resulting from FY 93 funding shortfall stretched development one year.
Engineering: 1000 lb JDAM integration.

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13b. (U) Cost Variance Analysis (Cont'd):

Estimating: Changes 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. Adjustments also included for test refinements, program refinements, adjustments for current and prior inflation, current and prior year escalation changes, and Small Business Innovative Research (SBIR). Estimate refined based on development data not previously available.

Support: Change due to increased factor base.

Procurement

Economic: Revised economic escalation indices and economic adjustment for negative program change.

Quantity: Quantity variance resulting from decrease of 206 units.

Schedule: Schedule variance resulting from FY 93 funding shortfalls, quantity allocation, and recategorized to correct error in Dec 92 SAR.

Engineering: Addition of 1000 lb JDAM requirement.

Estimating: Program refinements.

Support: Variance associated with inclusion of Interim Contractor Support (ICS) and Common Support Equipment (CSE), a decrease of 206 units, and recategorized to correct error in Dec 92 SAR.

MILCON

Economic: Revised economic escalation indices, and adjustments for negative program change.

Estimating: Variance based on revised depot requirements, and an estimate refinement in years 1998-2002.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices.	N/A	-39.5
(Economic)		
Adjustment for current & prior inflation. (Estimating)	+3.4	+6.0

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Current variance is the net impact of the FY94 rephase due to funding reductions, POM disconnects, FY95 congressional reduction (\$110M), and FY96 OSD reductions (\$200M). (Estimating)	+504.4	+680.6
 RDT&E Subtotal	 +507.8	 +647.1
 (2) <u>Procurement</u>		
Revised economic escalation indices. (Economic)	N/A	-276.8
Schedule variance resulting from 1 year slip in production due to funding reductions. (Schedule)	--	+1297.0
Program refinements (Estimating)	+36.3	+69.7
Initial spares variance is the result of an estimating factor adjustment. (Support)	-59.3	+24.8
Peculiar support variance is associated with estimate refinements. (Support)	+18.5	+113.0
Other weapon system cost variance is associated with estimate refinements. (Support)	+3.2	+51.2
 Procurement Subtotal	 -1.3	 +1278.9
 (3) <u>MILCON</u>		
Revised economic escalation indices. (Economic)	N/A	+3.6
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Increase due to the addition of a level 4 data lab, and an additional environmental requirement. (Engineering)	+4.0	+5.0
Adjustment for current & prior inflation. (Estimating)	-0.1	-0.1
Revised estimating methodology from cost per wing to cost per squadron, revised beddown plan, and cost realignment. (Estimating)	-2.5	-4.8
 MILCON Subtotal	 +1.4	 +4.2

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	152.946

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
152.946	-9.252	21.450	6.062	0.669	1.328	--	-6.866	13.391	166.337

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
Target Ceiling Qty
 \$11230.0 N/A 9

Estimated Price At Completion
Contractor Program Manager
 \$11169.1 \$12778.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-18.5	\$-65.0
Cumulative Variances To Date (12/31/94)	<u>\$-127.9</u>	<u>\$-76.8</u>
Net Change	\$-109.4	\$-11.8

Explanation of Change:

The \$-109.4M Net Change cost variance through December 1994 represents a negative change since last year's report largely due to increased cost associated with schedule slips, design complexities in avionics, airframe, and utilities & subsystems.

Avionics cost variance has increased as the result of design changes

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15. (U) Contract Information (Cont'd):

in communication, navigation, and identification, core processing, and electronic warfare.

Airframe cost variance has increased due to an increase in manpower associated with recovery from late drawing releases, and engineering overruns in mid & aft fuselage to meet configuration loads updates, and aft boom weldments.

Utilities & subsystems (U&S) cost variance has increased as the result of drawing/design changes in the electrical and environmental control systems (ECS).

The continued decline in schedule variance to a Net Change of \$-11.8M stems from design delays primarily in the Avionics areas of communication, navigation and identification, core processing, and electronic warfare, and late airframe drawing releases. Improvement is expected after the Air Vehicle Critical Design Review (CDR). To date, Lockheed cost and schedule variances are within acceptable parameters and have not impacted any contract milestones.

The increase in the Current Contract Price since last year's report primarily reflects the negotiated impact of rephasing due to FY 94 and FY 95 funding reductions.

(U) <u>FMD ENGINE (P&W):</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
PRATT & WHITNEY GOVT ENG, 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			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1904.8	N/A	27	\$1904.8	\$2143.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-21.8	\$-30.6
Cumulative Variances To Date (12/31/94)	\$-22.7	\$-14.9
Net Change	\$-0.9	\$15.7

Explanation of Change:

The \$-0.9M Net Change cost variance through December 1994 are the result of several components level redesigns and inefficiencies in manufacture of developmental hardware. Components currently experiencing the largest cost variances include the fan, nozzle, compressor, and low pressure turbine.

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15. (U) Contract Information (Cont'd):

The \$15.7M Net Change schedule variance improvement is attributable to the F-119 program replan executed in 1994 which was caused by F-22 program funding reductions. The replan involved P&W's rephasing of contractual effort to accommodate a three month slip in air vehicle CDR and eight month slip to F-22 first flight. Although no components currently break reporting thresholds, work breakdown structure elements still driving the schedule variance include the fan, system test and evaluation, controls and diagnostics, gearbox, and nozzle.

The increase in the Current Contract Price since last year's report reflects the negotiation and definitization of the F-22 replan and additional award fee paid to date. Pratt and Whitney cost and schedule variances have been within acceptable parameters and have not adversely impacted contract milestones to date.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 40.6% (13 yrs/32 yrs)

(2) Percent Program Cost Appropriated: 16.2% (\$11896.9 / \$73521.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY83-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2014)</u>	<u>Total</u>
RDT&E	11892.3	2138.7	1957.1	3538.4	19526.5
Procurement	-	-	91.4	53715.4	53806.8
MILCON	4.6	12.1	4.4	166.7	187.8
O&M	-	-	-	-	-
Total	11896.9	2150.8	2052.9	57420.5	73521.1

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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
1988				529.8	504.4	504.4	504.4	3.1
1989				801.7	800.1	800.1	800.1	4.2
1990				1093.6	1124.2	1124.2	1124.2	4.0
1991				893.4	953.3	949.1	947.8	4.3
1992				1462.1	1606.8	1606.3	1606.1	2.8
1993				1712.8	1925.2	1924.5	1921.8	2.7
1994				1793.4	2058.8	2056.2	1365.6	2.0
1995				1968.9	2325.3	823.2	1.0	2.7
1996				1758.8	2138.7			3.0
1997				1561.9	1957.1			3.0
1998				1049.6	1355.0			3.0
1999				750.3	997.1			3.0

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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: 3600 Research, Development, Test + Eval, AF (Cont'd)

2000				570.9	781.5			3.0
2001				287.1	404.8			3.0
Subtot				16896.7	19526.5	10382.2	8865.2	

Years 1998-2001 do not reflect impacts resulting from FY95/FY96 funding reductions.

Appropriation: 3010 Aircraft Procurement, Air Force

1996								3.0
1997				69.9	91.4			3.0
1998	4	0.5	448.8	735.2	991.2			3.0
1999	4	45.4	434.9	877.4	1217.5			3.0
2000	12	46.5	1111.8	1560.8	2233.0			3.0
2001	24	85.7	1925.4	2395.9	3529.2			3.0
2002	36	40.8	2575.5	3027.0	4596.7			3.0
2003	48	20.4	3118.2	3563.8	5572.5			3.0
2004	48		2909.7	3399.2	5475.0			3.0
2005	48		2766.0	3246.0	5384.3			3.0
2006	48		2661.8	3132.2	5352.5			3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

2007	48		2581.1	3018.7	5312.7			3.0
2008	48		2519.9	2943.3	5336.5			3.0
2009	48		2462.6	2778.0	5187.4			3.0
2010	26		1314.8	1480.7	2848.0			3.0
2011				166.0	328.0			3.0
2012				111.9	227.7			3.0
2013				50.5	105.9			3.0
2014				8.0	17.3			3.0
Subtot	442	239.3	26830.5	32564.5	53806.8			

Appropriation: 3300 Military Construction, Air Force

1995				3.7	4.6			2.7
1996				9.6	12.1			3.0
1997				3.4	4.4			3.0
1998				4.1	5.5			3.0
1999				3.2	4.4			3.0
2000				14.3	20.4			3.0
2001				17.2	25.2			3.0

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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)

2002				7.0	10.5			3.0
2003				5.1	8.0			3.0
2004				3.4	5.4			3.0
2005				16.1	26.6			3.0
2006				7.5	12.8			3.0
2007				6.5	11.4			3.0
2008				10.8	19.5			3.0
2009				9.1	17.0			3.0
2010								3.0
2011								3.0
2012								3.0
Subtot				121.0	187.8			
Grand Total	442	239.3	26830.5	49582.2	73521.1	10382.2	8865.2	

Note: Obligated and expended amounts reflect program office records as of 16 January 1995.

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17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (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 has been updated to reflect current program structure as of 31 December 1994.

The F-22 concept of operation is an 18 aircraft fighter squadron with a utilization rate of 332 flight hours per aircraft. The wartime scenario was used to estimate the manpower requirements. The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-22 cost estimate was 442.

- 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	14.6	23.1
Unit Level Consumption	15.6	12.9
Depot Maintenance	2.2	13.8
Sustaining Support	1.5	19.0
Installation Support Per	0.0	3.1
Indirect Support	7.2	7.7
Depot Support	0.0	2.1
Acquisition and Training	0.0	8.2
Total	41.1	89.9

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18b. (U) Operating and Support Costs (Cont'd):

The F-15C is antecedent to the F-22; both are two engine air-to-air fighters with similar operational concepts. The F-15C concept of operation is a 24 aircraft fighter squadron with a utilization rate of 360 flight hours per year per aircraft. The wartime scenario was used to estimate the manpower requirements. The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-15C cost estimate was 648.

Both the F-22 and F-15C estimates were based on AFI 65-503 Cost and Planning Factors. There is no planned intermediate maintenance for the F-22 based on 2-Level maintenance concept. The variation in cost categories is representative of the Office of the Secretary of Defense Cost Analysis Improvement Group (OSD CAIG) dated May 92.

c. (U) Contractor Support Costs -- None.

There is no planned contractor support cost for the F-22.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: Titan IV

AS OF DATE: December 31, 1994

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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:
Space and Missile Systems Center/ME Col Joseph B. Sovey
180 Skynet Street Assigned: December 14, 1993
Suite 1508 AV 833-0210 COMM (310) 363-0210
Los Angeles AFB, CA 90245-4659
4. Program Elements/Procurement Line Items:

RDT&E:
PE 0304111F (Shared) Project 299998, 346503, 6569AJ
PE 0305119F (Shared) Project 66624A
PE 0305144F, 0305171F (Shared)

PROCUREMENT:
APPN 3020 ICN MSBSTR (Air Force) (Shared) Project 23BSTR
APPN 3020 ICN MSO299 (Air Force)
APPN 3080 ICN 834600 (Air Force)

MILCON:
PE 0305119F
5. Related Programs:
Defense Support Program (DSP); Military Satellite Communication System (MILSATCOM); Space Shuttle Operations-Inertial Upper Stage (IUS); Classified Payloads

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Titan IV, December 31, 1994

6. Mission and Description:

The Titan IV is a heavy lift rocket booster that will assure continued access to space for the nation's highest priority space systems. The Titan IV program will not replace any defense programs. 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 with No 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 was in direct response to a National Security Decision Directive. The initial contract for development, qualification, and production of 10 Titan IVs with Centaur upper stages was awarded in February 1985. As a result of the January 1986 Space Shuttle accident, the Department of Defense (DOD) began a recovery plan which included the acquisition of 13 additional Titan IVs. The resulting 23-vehicle program, placed on contract in December 1987, 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 an additional launch pad at Cape Canaveral Air Station (CCAS), 18 additional Titan IV boosters and associated facility and plant enhancements. The current 41-vehicle program was definitized in December 1989. In September 1991, Production Slowdown I reduced production from 10 to 5.5 vehicles per year to match reduced launch rate requirements; there were further reductions to 3 vehicles per year in June 1993 with Production Slowdown II and 2 vehicles per year in January 1994 with the production "bridge." The Unified Payload Integration (UPI) contract was awarded in July 1992 to provide payload integration capability through FY97. The first Titan IV was successfully launched in June 1989 from CCAS. In April 1991, an explosion occurred during the static firing test of the SRMU Preliminary Qualification Motor No. 1 (PQM-1) causing significant damage to the test facility. SRMU casting began in November 1993

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Titan IV, December 31, 1994

7a. Program Highlights (Cont'd):

after all further tests were successful. A Titan IV vehicle launched from Vandenberg AFB on 2 Aug 1993 experienced a failure caused by a burn through on one of the SRMs. The program successfully recovered with the launch of Titan IV-10/Military Strategic and Tactical Relay (MILSTAR) payload in February 1994 which was the first Titan IV/Centaur launch and the first Titan IV launch from LC-40 at CCAS.

b. Significant Developments Since Last Report --

Three successful Titan IV launches occurred since last report including Defense Support Program and two classified payloads. The first SRMU segment arrived at VAFB on 14 Feb 94. OSD staff certified the Titan IV Program on 6 May 94 due to the unit cost breach reported in the Dec 93 SAR. The Titan IV DAB review scheduled for 11 Aug 94 was cancelled by the USD (A&T) because all Titan IV programmatic issues were resolved prior to the DAB Readiness Meeting held on 8 Aug 94. Negotiations for the two "Production Bridge" Undefined Contractual Actions (UCAs) were completed on 9 Dec 94.

The Titan IV system will satisfy mission requirements.

c. Changes Since As Of Date -- None

8. Threshold Breaches:

There are no breaches to the approved DAE Acquisition Program Baseline (APB) dated 26 May 94, and no Nunn-McCurdy Unit Cost Breaches.

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	MAY 93	SEP 93
SLC-40	N/A	SEP 92	FEB 93

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Centaur Structural Test	N/A	JUL 89	APR 91
SRMU Static Firing (PQM-1)	N/A	JUN 92	JUN 92
SRMU ILC	N/A	JUL 96	JUL 96
Centaur Processing Facility IOC	N/A	JAN 97	JAN 97

SLC-40 is referred to as LC-40 throughout this document.

b. Previous Change Explanations --

Due to favorable progress driven by the Preliminary Design Review, the Systems Critical Design Review (CDR) was held one month ahead of schedule.

Progress made by the core contractor allowed delivery of the first core to CCAS 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 from February to April 1988. The delay in the Titan IV/NUS WTR ILC at VAFB to December 1990 was caused by the requirement for additional electrical mods to the Mobile Service Tower (MST) and the need to complete ground systems tests. The Titan IV/NUS WTR ILC was subsequently achieved two months early in October 1990.

The initial Centaur ILC structural test (July 1989) was completed in November 1989. Additional Centaur tests were completed in April 1991.

The delayed launch of the first Titan IV caused a slip in the TIV/Centaur ILC due to derived scheduling conflicts. A further slip occurred from August 1991 to November 1991 due to a launch delay of Titan IV-6. The delay impacted facility modifications necessary for Centaur. An additional slip from August 1991 to November 1991 due to Centaur separation ring redesign and test in preparation for the ILC and a May 1991 Atlas Centaur flight failure (AC-70). A further slip from November 1991 to February 1992 resulted from additional inspections for contaminations resulting from the Commercial Atlas/Centaur (AC-70) failure investigation. The next slip from February 1992 to December 1992 was due to an acceptance test failure of the Digital Computer Unit. The next slip from December 1992 to June 1993 was due to assessment of the August 1992 AC-71 failure and user direction. Titan IV/Centaur ILC was successfully achieved during September 1993 which was a slip from February 1993 due to implementation of AC-71 failure fixes.

The requirement for a second VAFB launch pad (SLC-7) was deleted. Previous LC-40 ILC of fourth quarter FY 92 was further refined to reflect a July 1992 ILC. LC-40 ILC was successfully achieved on 28

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9b. Schedule (Cont'd):

February 1993.

The crane accident in September 1990 at Edwards AFB damaged the test stand, delaying the PQM-1 test until April 1991, and the SRMU ILC until 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 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 SRMU static firing (PQM-1') further slipped from May to June 1992 due to weather conditions (i.e. winds) at the test site.

PQM-1' was successfully tested on 12 June 1992. The SRMU ILC was delayed from August 1993 to July 1994 due to further delays in the qualification test program. Delays in the development of the Flight Termination System (FTS) further delayed SRMU ILC from July 1994 to July 1996.

IOC of the Centaur Processing Facility was delayed from September 1995 to January 1997 due to FY 94 budget cuts and delays in awarding the military construction contract.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY87 President's Budget, February 1986.

Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1994.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
System Reliability (%)	98	98	/ 96	91	96
Payload to Geosynchronous Orbit (k-lbs) (Titan IV/Centaur)					
SRM	10.0	10.0	/ 10.0	10.0	10.0
SRMU	N/A	11.5	/ 11.5	11.5	11.5
Payload to Transfer Orbit (k-lbs)					
SRM	N/A	38.8	/ 38.8	39.3	39.3
SRMU	N/A	47.0	/ 47.0	47.0	47.0

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Payload to Low Earth Polar Orbit (k-lbs) (Titan IV/NUS)				
SRM	N/A	31.1 / 31.1	31.4	31.4
SRMU	N/A	38.8 / 38.8	38.8	38.8

Note: Centaur structural limit is 11.5 K-lbs. Payload to GEO for Titan IV 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 for yet-to-be launched vehicle configurations (SRMU).

b. Previous Change Explanations --

Performance Objectives/Thresholds for payload to low earth polar orbit (Titan IV/NUS) were updated in the 9 June 1993 APB revision to reflect requirements in the 2 April 1991 System Operational Requirements Document (SORD).

Demonstrated performance for Titan IV System Reliability was reduced from 100% to 88% due to the failure of Titan IV-11 and the subsequent successful launch of Titan IV-10.

The demonstrated performance for Payload to Geosynchronous Orbit (Titan IV/Centaur) was reduced from 10.2 to 9.8 k-lbs. due to the results of recent Centaur engine testing. The resultant current estimate was also reduced from 10.2 to 10.0 k-lbs. due to the results of recent Centaur engine testing.

The 09 June 1993 APB added the Payload to Transfer Orbit section and deleted the previous section on Payload to Geosynchronous Orbit (Titan IV/IUS) SRM.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
FY87 President's Budget, February 1986.

Approved Program:
DAE Approved Acquisition Program Baseline dated May 26, 1994.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	579.7	3194.0	2706.4
Procurement	1570.8	19868.4	14294.3
Flyaway	(1106.6)		(11465.1)
Other Wpn Sys	(464.2)		(2829.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	105.3	94.1
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 85 Base-Year \$	2150.5	23167.7	17094.8
 Escalation	378.7	14545.4	7975.1
Development (RDT&E)	(61.4)	(1252.3)	(793.6)
Procurement	(317.3)	(13267.4)	(7152.8)
Construction (MILCON)	(0.0)	(25.7)	(28.7)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2529.2	37713.1	25069.9
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	10	65	47
Total	10	65	47

Note 1: All end items are considered fully configured.

Note 2: PDR was submitted 23 Jan 95 due to a Titan IV program reduction from 65 to 47 vehicles in the FY 95 Defense Appropriations Act.

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 May 26, 1994.

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12. Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (MAY 94 APB)	Percent Change
a. Total Program			
(1) Cost (BY85\$)	17094.8	23167.7	
(2) Quantity	47	65	
(3) Unit Cost	363.72	356.43	2.05
b. Procurement			
(1) Cost (BY85\$)	14294.3	19868.4	
(2) Quantity	47	65	
(3) Unit Cost	304.13	305.67	-0.50

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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	-4.1	+263.0	+7.0	+265.9
Quantity	-	+8995.6	-	+8995.6
Schedule	+795.1	+7580.2	+5.0	+8380.3
Engineering	+1008.3	-1522.6	-	-514.3
Estimating	+960.4	+10672.8	+114.4	+11747.6
Other	-	-	-	-
Support	+1045.5	+5258.7	-	+6304.2
Subtotal	+3805.2	+31247.7	+126.4	+35179.3
Current Changes:				
Economic	-5.8	-237.9	0.4	-243.3
Quantity	-	-4616.2	-	-4616.2
Schedule	-	-3101.7	-	-3101.7
Engineering	59.6	-2085.2	-	-2025.6
Estimating	-97.5	426.7	-4.0	+325.2
Other	-	-	-	-
Support	-902.6	-2074.4	-	-2977.0
Subtotal	-946.3	-11688.7	-3.6	-12638.6
Total Changes	+2858.9	+19559.0	+122.8	+22540.7
Current Estimate	3500.0	21447.1	122.8	25069.9

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Titan IV, December 31, 1994

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	+377.7	+2972.4	-	+3350.1
Engineering	+725.7	-1119.4	-	-393.7
Estimating	+777.9	+6601.4	+97.2	+7476.5
Other	-	-	-	-
Support	+733.9	+3378.2	-	+4112.1
Subtotal	+2615.2	+18297.6	+97.2	+21010.0
Current Changes:				
Quantity	-	-2286.3	-	-2286.3
Schedule	-	-1419.3	-	-1419.3
Engineering	48.7	-1115.4	-	-1066.7
Estimating	-68.7	260.1	-3.1	+188.3
Other	-	-	-	-
Support	-468.5	-1013.2	-	-1481.7
Subtotal	-488.5	-5574.1	-3.1	-6065.7
Total Changes	+2126.7	+12723.5	+94.1	+14944.3
Current Estimate	2706.4	14294.3	94.1	17094.8

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. Extension of the program's procurement, delivery, and launch schedules from FY05 to FY14.

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; Preplanned Product Improvements (P3I) and range safety design modifications. Revised Flight Termination System block upgrade beginning on vehicle #24 and

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13b. Cost Variance Analysis (Cont'd):

lightning mitigation towers for LC-41. Range safety regulations require additional vehicle modifications. Program extension due to changes in user requirements through FY14 requires upgrade and modernization of vehicle hardware.

Estimating: Recurring and nonrecurring payload integration revised estimates; Transfer to procurement of funds for previously designated shuttle missions; Transfer of outyear funds from procurement; 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 Federally Funded Research & Development Corporation (FFRDC) support for increased program scope, facility design support for the Solid Motor Assembly and Readiness Facility (SMARF) and Centaur Processing Facility (CPF); Payload integration 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. Revised Payload Integration estimate due to program stretch-out. Reconfiguration of future vehicle buys has caused a reduction in Air Force launch vehicle, ground equipment, and integration costs. Adjustment for current and prior year Escalation.

Support: Additional support equipment for accelerated activation at the CCAS, FL, launch site; Facility design for the new Centaur Processing Facility and upgrades to the SRM testing facility at CCAS, 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. SRMU Amortization, Working Capital Adjustment and Claims. New federal regulations requiring development of hazardous waste management and pollution prevention programs.

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

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13b. Cost Variance Analysis (Cont'd):

schedule; Accelerated buy of original 23 vehicles; Adjustments to vehicle launch requirements to comply with Oct 91 Space Launch Advisory Group (SLAG); Impact due to slowed down production schedule. Delay in mission requirements deferred procurement of booster hardware for vehicles 42 through 65 (42+) by at least one year. Procurement, delivery, and launch schedule extension resulted in continuation of sustaining engineering and launch services contract through FY14.

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. Program stretch-out through FY14 required upgrade and modernization of vehicle hardware. Range safety modifications required additional vehicle modifications.

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 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 FFRDC 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;

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13b. Cost Variance Analysis (Cont'd):

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. Additional storage to support reduction of launch requirements. Production rate slowdown from 5.5 to 3 vehicles per year results in increased cost for vehicles 42 through 65. Increase of stockfund prices for flight propellants. Added program improvements (Continuous Product/Process Improvements) and Industrial Modernization. Changes in future requirements for Centaur upper stages and launch vehicles resulted in revised hardware estimate. Shift of the 42+ Follow-on buy from FY 95 to FY97 resulted in increase in hardware and systems engineering costs. Revised estimate for facilities and ground equipment. Changes in future buy plans caused an increase in non-Air Force payload integration costs. Revised estimate included allowance for settlement of prior and out year contractor claims. Defense program cutbacks caused changes to contractor business base, resulted in projected increased overhead rates. Delayed procurement and launch schedule resulted in revised engineering change estimate.

Support:

Accelerated procurement of support equipment at the CCAS, FL, launch site and recategorization of Flyaway/Support costs reported in December 1985 SAR; Initial Aerospace Ground Equipment (AGE) and communication equipment requirements to support launch requirements at CCAS, FL and VAFB, CA; AGE for second west coast launch pad at VAFB, CA; AGE requirements at CCAS, 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. Revised estimate for launch operations, storage and sustaining engineering due to program stretchout. Disposition of Government-owned,

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13b. Cost Variance Analysis (Cont'd):

contractor operated facilities. New federal regulations required the development of hazardous waste programs. Delays in launch schedule required additional vehicle storage. Program stretch-out required continued program office technical and management support.

MILCON

Economic: Revised economic inflation indices.
 Schedule: Change due to rephasing of build schedule.
 Estimating: Adjustment for current and prior year escalation offset; Realignment of the second Titan IV launch pad costs into outyears; Funds added/realigned for SMARF and the Centaur Processing Facility at CCAS, 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)	N/A	-5.8
New requirement to requalify the Solid Rocket Motor Upgrade, combined with the decrease in the number of vehicles from 65 to 47, increases hardware development costs. (Engineering)	+51.7	+76.7
Elimination of upgrades reduces Continuous Product/Process Improvement costs. (Engineering)	-3.0	-17.1
Revised estimate to maintain Aerospace Ground Equipment and Facilities throughout the life of the program. (Estimating)	+12.3	+19.7
Revised estimate of Air Force Payload Integration costs. (Estimating)	-32.1	-51.3
Revised estimate to comply with Range Safety regulations. (Estimating)	-45.5	-61.9
Revised estimate to comply with current environmental laws and regulations. (Support)	-72.6	-138.2

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Decrease in the number of vehicles from 65 to 47 and the shortening of the program from 2014 to 2011 reduces contractor system engineering and project management costs. (Support)	-239.9	-459.6
Shortening of the program from 2014 to 2011 reduces the cost of program office support and engineering changes. (Support)	-156.0	-304.8
Adjustment for current and prior year escalation. (Estimating)	-3.4	-4.0
RDT&E Subtotal	-488.5	-946.3
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-237.9
Decrease in the number of vehicles from 65 to 47 reduces hardware costs. (Quantity)	-2234.2	-4376.9
Decrease in the number of vehicles from 65 to 47 reduces non Air Force Unified Payload Integration costs. (Quantity)	-52.1	-239.3
Reduced launch capability, and the shortening of the program from 2014 to 2011, reduces launch services costs. (Schedule)	-1419.3	-3101.7
Decrease in the number of vehicles from 65 to 47 and shortening of the program from 2014 to 2011 reduces the cost of incentives and engineering changes. (Engineering)	-730.9	-1476.6
Elimination of upgrades results in lower Continuous Product/Process Improvement costs. (Engineering)	-384.5	-608.6
Revised estimate to maintain AGE and Facilities throughout the life of the program. (Estimating)	+196.4	+339.3
Revised estimate to complete required Range Safety improvements. (Estimating)	+8.2	+12.1
Revised estimate for settlement of prior and out year contractor claims. (Estimating)	+38.3	+51.9

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Reduction in the number of vehicles from 65 to 47 and shortening of the program from 2014 to 2011 reduces contractor systems engineering and project management costs. (Support)	-675.2	-1431.3
Reduced manpower requirements and shortening of the program from 2014 to 2011 lowers the cost of program office technical support. (Support)	-199.0	-369.2
Decrease in the number of vehicles from 65 to 47 reduces storage costs. (Support)	-39.5	-69.8
Revised estimate to comply with current environmental laws and regulations. (Support)	-99.5	-204.1
Adjustment for current and prior year escalation. (Estimating)	+17.2	+23.4
Procurement Subtotal	-5574.1	-11688.7
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	+0.4
Revised estimate to complete construction of the Solid Motor Assembly Building (SMAB) at CCAS. (Estimating)	-2.8	-3.6
Adjustment for current and prior year escalation. (Estimating)	-0.3	-0.4
MILCON Subtotal	-3.1	-3.6

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
252.9	0.5	-105.9	112.3	-54.0	256.9	--	70.8	280.6	533.4

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --				Initial Contract Price		
Titan IV:				Target	Ceiling	Qty
MARTIN MARIETTA, DENVER, CO						
F40701-85-C-0019, FPIF				\$2095.8	\$2287.8	10
Award: February 28, 1985						
Definitized: March 1, 1985						
Current Contract Price				Estimated Price At Completion		
Target	Ceiling	Qty		Contractor	Program Manager	
\$11568.8	\$12463.6	41		\$12102.2	\$12270.7	
Previous Cumulative Variances				Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/31/94)				\$-553.1	\$-151.4	
Net Change				\$-518.1	\$-157.4	
				\$35.0	\$-6.0	

Explanation of Change:

Explanation of change in target (from \$10878.2M to \$11568.8M) and ceiling prices (from \$11736.5M to 12463.6M): The following Titan Program effort was added to the -0019 contract since the previous report: Titan IV "Production Bridge" as well as Hercules SRMU "Production Bridge," SRMU Flight Termination System (FTS) Block Update, Wide Band Instrumentation System (WIS), Non UPI Study Clause Contract Restructure and Integrated Product Development (IPD) Non UPI Support Task Order (NUSTO).

Explanation of current changes: The decrease in cost variance to date (\$35.0M) is due to: (1) Synergy savings associated with the General Dynamics acquisition; (2) Continued good performance at McDonnell Douglas; (3) Continued good performance at the CCAS and VAFB launch sites; (4) Better performance in system engineering; The schedule variance increase (\$-6.0M) is primarily attributed to: (1) Production Operations working to "Production Bridge" schedule

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Titan IV, December 31, 1994

15. Contract Information (Cont'd):

before "Production Bridge" was baselined and (2) Hercules and Aerojet production delays.

It is anticipated that the contract completion will not be adversely impacted by current variances.

Note: Contract F04071-85-C-0019 is categorized as FPIF/CPFF/CPAF/AF/CS/CR/MSI/FFP and includes RDT&E, Procurement, and O&M.

b. Procurement --

UNIFIED PAYLOAD INT(UPI):	Initial Contract Price		
	Target	Ceiling	Qty
MARTIN MARIETTA, DENVER, CO			
F04701-92-C-0028, CPAF	\$673.5	N/A	0
Award: June 30, 1992			
Definitized: June 30, 1992			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$677.5	N/A	0	\$677.5	\$677.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$21.7	\$-5.9
Cumulative Variances To Date (12/31/94)	\$18.3	\$-4.6
Net Change	\$-3.4	\$1.3

Explanation of Change:

Explanation of change in target price (from \$681.0 to \$677.5M):
Changes in both price and cost will occur throughout the duration of this contract. The contract is modified periodically, to support specific missions.

The \$-3.4M change in cost variance on the -0028 underun is due primarily to work planned Level Of Effort (LOE) and recovered or deferral of work relative to current mission requirements. The favorable schedule variance change (\$1.3M) is due to rebaselining to realistic mission manifests. None of these variances are expected to adversely impact completion of this contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 40.7% (11 yrs/27 yrs)
- (2) Percent Program Cost Appropriated: 49.7% (\$12467.3 / \$25069.9)

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Titan IV, December 31, 1994

16a. Program Funding Summary (Cont'd):

Note: The information on this page reflects the new format generated by the CARS 4.4 software.

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY85-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2011)	Total
RDT&E	2519.9	131.1	145.2	703.8	3500.0
Procurement	9824.6	984.1	1117.0	9521.4	21447.1
MILCON	122.8	-	-	-	122.8
O&M	-	-	-	-	-
Total	12467.3	1115.2	1262.2	10225.2	25069.9

Note: The information on this page reflects the new format generated by the CARS 4.4 software.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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				317.8	356.3	356.3	356.3	2.9
1989				340.3	400.2	400.2	399.0	4.2
1990				287.9	348.9	348.9	339.7	4.0
1991				139.3	175.3	175.3	161.6	4.3

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Titan IV, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1992				169.8	219.9	219.9	200.2	2.8
1993				112.2	148.5	148.5	107.9	2.7
1994				191.4	259.0	240.2	104.5	2.0
1995				103.5	144.1	43.0	0.3	2.7
1996				91.4	131.1			3.0
1997				98.3	145.2			3.0
1998				132.9	202.2			3.0
1999				58.2	91.1			3.0
2000				35.1	56.6			3.0
2001				32.4	53.8			3.0
2002				23.3	39.9			3.0
2003				21.0	37.0			3.0
2004				13.7	24.9			3.0
2005				13.7	25.7			3.0
2006				13.8	26.6			3.0
2007				13.9	27.5			3.0
2008				13.9	28.4			3.0
2009				13.8	29.1			3.0

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Titan IV, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2010				13.8	30.0			3.0
2011				13.9	31.0			3.0
Subtot				2706.4	3500.0	2400.0	2137.2	

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	646.7	941.4	1122.1	1122.1	1118.3	2.9
1989	5	215.4	502.9	870.5	1083.8	1083.7	1080.1	4.2
1990	5	166.8	555.3	867.7	1101.1	1101.1	1020.7	4.0
1991	5	229.7	319.0	694.2	908.7	908.7	715.0	4.3
1992	6	295.9	231.1	717.0	951.4	951.4	819.9	2.8
1993	6	417.0	226.7	785.6	1070.0	1068.1	854.0	2.7
1994	4	235.7	390.9	764.3	1071.5	993.3	287.9	2.0
1995	2	200.6	302.8	633.3	913.9	146.1	8.4	2.7
1996		125.3	406.8	662.2	984.1			3.0
1997		118.5	476.8	729.6	1117.0			3.0

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Titan IV, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1998	2	82.4	481.4	734.0	1157.5			3.0
1999	2	132.7	449.2	733.5	1191.2			3.0
2000	2	91.8	378.1	590.1	987.3			3.0
2001		106.9	335.1	552.2	951.5			3.0
2002		61.5	259.3	407.2	722.8			3.0
2003		54.7	183.5	309.6	565.9			3.0
2004		48.5	150.4	270.0	508.5			3.0
2005		42.6	118.7	233.5	452.7			3.0
2006		39.4	120.2	223.5	446.5			3.0
2007		45.3	121.9	249.5	513.5			3.0
2008		32.2	123.7	228.8	484.9			3.0
2009		29.1	125.4	226.6	494.7			3.0
2010		31.7	127.3	230.6	518.5			3.0
2011		26.5	129.4	227.2	525.9			3.0
Subtot	47	3193.3	8210.0	14232.5	21365.0	8894.5	7424.3	

All User funded Titan IV vehicles, and all funding related to Air Force vehicles after December 1992, are incrementally funded. Therefore recurring Flyaway dollars do not correspond logically to procurement quantities in FY 85, 86, 96, and 97. From 2001 to 2011, there are no production quantities, but there are recurring costs

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Titan IV, December 31, 1994

16c. Program Funding Summary (Cont'd):

which are associated with launch operations annual costs at Cape Canaveral and Vandenberg AFB. These annual costs are contracted as a launch capability but are not tied to specific hardware units.

Appropriation: 3080 Other Procurement, Air Force

1992		61.8		61.8	82.1	82.1	81.0	2.8
Subtot		61.8		61.8	82.1	82.1	81.0	

Appropriation: 3300 Military Construction, Air Force

1990				44.1	55.8	55.8	43.9	4.0
1991				7.7	10.0	10.0		4.3
1992				18.1	24.0	18.6	13.4	2.8
1993				24.2	33.0			2.7
Subtot				94.1	122.8	84.4	57.3	
Grand Total	47	3255.1	8210.0	17094.8	25069.9	11461.0	9699.8	

Expenditures and Obligations reflect program office records as of January 31, 1995.

Procurement quantities reflect a change from the FY95 President's budget to include a production "bridge" which will further slow production of Titan IVs to two per year and delay the follow on buy of Titan IVs by at least two years.

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RDT&E

Procurement

To Date

0/0

31/31

b. Approved Design-to-Cost Objective -- N/A.

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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 program. The updated Titan IV Program Office Estimate (POE) annual O&S costs were estimated to be \$71.6M in base year dollars. With a reasonable rate of four launches per year the average annual cost in base year dollars is \$17.9M. The Titan 34D data is historical data from old SARs.

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	17.9	7.5
Total	17.9	7.5

Note: All costs described in Section 18.b are "average cost per launch" and not "average annual"

c. Contractor Support Costs -- None.

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AF-13 JSTARS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (O&A) 623)

PROGRAM: Joint STARS

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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1. (U) Designation and Nomenclature (Preferred Name):
Joint STARS

2. (U) DoD Component: USAF

Joint Participants:
US Army

3. (U) Responsible Office and Telephone Number:
Joint STARS Program Office Col Robert W. Chedister
Electronic Systems Center Assigned: August 30, 1994
3 Eglin Street AV 478-5725 COMM (617)377-5725
Hanscom AFB, MA 01731-2119

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0603770F
PE 0604270F Project 3894 (Shared)
PE 0604616F, 0604770D, 0604770F

SAF/PAS

95-200 - T

CLEARED
FOR OPEN SOURCE
AS AMENDED
11/1/01

DIRECTORATE
ANALYSIS
11/1/01

~~Classified By: Joint STARS Classification with Level of Control~~
~~Declassify and Downgrading Agency Recommendation Required (U)~~
~~Downgrading Instructions: Not Subject to Automatic Downgrading~~

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Joint STARS, December 31, 1994

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 3010 ICN 27581F (Air Force)

MILCON:

PR 0604770F

5. (U) Related Programs:

Global Positioning System (GPS), Joint Tactical Information Distribution System (JTIDS), Single Channel Ground Air Radio System (SINCGARS), Inertial Navigation Unit (INU), E-8 (formally C-18), HAVE QUICK, E-6, HAVE SYNC, Joint STARS Ground Station Module (GSM).

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 --

The Joint STARS Program resulted from a May 82 OSD/USDRE memorandum directing Air Force lead of a joint program with the Army to develop a single multi-mode target acquisition and weapon guidance system. Joint STARS was organized from PAVE MOVER and Standoff Target Acquisition System (SOTAS) Program Offices. The Full Scale Development (FSD) contract for the airborne segment using the E-8A, a Boeing 707-300 series aircraft converted to military use, was awarded to Grumman Aerospace Corporation in Sep 85. The first Joint STARS FSD aircraft was delivered in Jul 87 and an OSD-directed Operational Utility Evaluation concluded the system would meet requirements.

The first flight test and the System Preliminary Design Review took place in Apr 88, followed by the Milestone IIB decision in Jul 88 which approved procurement of 21 new 707 aircraft as well as self defense and reliability improvements. In Dec 88 the first increment

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7a. (U) Program Highlights (Cont'd):

of the Critical Design Review (CDR) was conducted and an operating radar was flown for the first time. An Acquisition Decision Memorandum in Nov 89 directed that used 707 aircraft, vice new, be used for the Joint STARS platform.

An Early Look system deployment to Europe and operational field demonstration with Army Ground Station Modules took place in Feb 90. The Follow-on FSD (FOFSD) contract, which included a third FSD aircraft in a production configuration, was awarded in Nov 90. Both E-8A test aircraft and 6 GSMs were successfully deployed to Saudi Arabia for Desert Shield/Storm Jan-Mar 91.

Robins AFB, GA was selected as the Main Operating Base (MOB) in Apr 91. Program Management Directive 21, dated 29 Jul 91, reduced the program from 21 to 19 aircraft. A System Level Performance Evaluation in Sep 91 supported the exit criteria for an advance buy decision in Jan 92. A Nov 91 Four Star Summit addressed lessons learned in Desert Storm and the requirement for development and production representative aircraft to be maintained in a condition that would allow for deployment of two aircraft within 60 days to support contingency requirements. The Joint STARS Depot Support Division was established at Robins AFB in 1992.

The FOFSD System CDR was completed in Feb 93 leading to Defense Acquisition Board (DAB) authorization of three Low Rate Initial Production (LRIP) lots in May 93. Lot I full procurement contract was awarded in May 93 and Lot II Advance Buy in Jun 93. In Sep 93, the Ground Data Terminal Contract was awarded to Cubic Corp and in Oct 93 the Ground Support System Phase I contract was awarded to Grumman Melbourne Systems. A major benchmark was reached in Nov 93 with the official delivery of two E-8A systems to the government. The first of the three E-8C Software Builds was completed and formal software qualification testing began in Nov 93. The E-8C first flight took place in Dec 93, after the 707-300 was refurbished and modified to the production configuration.

b. (U) Significant Developments Since Last Report --

In Mar 94 the E-8C Follow-on Full Scale Development (FOFSD) aircraft flew its first system flight, demonstrating system capability in a modified sub-system configuration. In Apr 94, modifications were started on a used 707 selected to serve as the Ground Maintenance Trainer. The Government delivered a C-18 aircraft to Grumman Melbourne in May 94 to support production rewiring design engineering and technical order validations. Air Worthiness Testing was completed on an E-8A aircraft, configured like an E-8C, at Edwards AFB, CA in Jun 94.

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7b. (U) Program Highlights (Cont'd):

The Low Rate Initial Production (LRIP) Lot II Full Procurement Contract was definitized in Jun 94 and an upgrade to the Tactical Digital Information Link (TADIL-J) was awarded in Jul 94. Despite two protests lodged by Hughes, the Government Accounting Office found in favor of the Air Force and work is being accomplished on schedule on the Maintenance Trainer Sets by AAI Corporation. Five Ground Data Terminals and one Airborne Data Terminal for the Surveillance and Control Data Link were delivered during Jul-Aug 94 as part of a producibility improvement production lot.

An E-8A aircraft deployed to Europe in Oct 94 and successfully demonstrated the Joint STARS system to NATO decision makers. The FY95 Appropriation Bill provided \$99.9M to buyout and store up to 12 aircraft, allowing the program to purchase the best available airframes in the best possible market conditions. A joint government and contractor Multiservice Operational Test and Evaluation (MOT&E) Tiger Team worked from Sep-Dec 94 to identify risks and propose actions to reduce the risks associated with timely accomplishment of MOT&E. The result was an integrated contractor schedule to complete both FSD and FOFSD using scarce test assets.

The Joint STARS Program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --
FOFSD achieved significant progress in Developmental Test and Evaluation with completion of software development and E-8C flight with full system configuration (complete prime mission equipment installation with full software functionality) in Jan 95. E-8A radar subsystem functional and physical configuration audits were completed in Jan 95. FSD test activities were completed in Feb 95 with performance of the last E-8A Government Developmental Test and Evaluation flight and radar software lab tests.

8. (U) Threshold Breaches:

There are no breaches to the DAE approved acquisition program baseline (APB) dated 26 May 93, and no Nunn-McCurdy unit cost breaches.

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Joint STARS, December 31, 1994

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone IIA	SEP 85	SEP 85	SEP 85
FSD Contract Award	SEP 85	SEP 85	SEP 85
Preliminary Design Review (PDR)	MAY 86	N/A	MAY 86
Hardware			
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 Start	FEB 91	JUN 91	OCT 91
Milestone IIIA	DEC 91	N/A	N/A
DAB Program Review, LRIP	N/A	MAR 93	MAY 93
Software Support Facility Delivery (MSSF Phase I)	N/A	MAY 96	MAY 96
Flight/Mission Simulator Delivery (MCTC Phase I & J-FCTS Phase I)	N/A	MAY 96	JUL 96 (Ch-1)
DT&E Complete (FOFSD)	N/A	JUN 95	SEP 95 (Ch-2)
MOT&E			
Start	N/A	JUN 95	NOV 95 (Ch-3)
Complete	N/A	FEB 96	APR 96 (Ch-4)
Milestone III	N/A	JUN 96	AUG 96 (Ch-5)
Full Rate Production Contract Award	N/A	JUN 96	JUN 96
Self Defense Suite (SDS) Flight Test	DEC 92	N/A	N/A
SDS Production Decision	OCT 93	N/A	N/A
First Aircraft Deliver to TAC	MAR 94	N/A	N/A
First Aircraft Delivery to ACC	N/A	FEB 96	FEB 96
First Training Squad Ready for Trng	N/A	MAR 96	MAR 96
Depot Support Date	N/A	JAN 96	JAN 96
First SDS Installation (Group A)	JAN 95	FEB 96	FEB 96
Required Assets Availability (RAA)	N/A	MAY 96	MAY 96
Organic Support Capability	N/A	MAR 97	MAR 97
IOC	SEP 96	MAR 97	MAR 97
Mature Reliability	N/A	SEP 98	SEP 98
Last Aircraft Delivery	SEP 00	N/A	N/A
Follow-On OT&E Start	N/A	SEP 99	SEP 99

Note: The Full Rate Production Contract Award Milestone of Jun 96 represents Advance Buy.

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9b. (U) Schedule (Cont'd):

b. (U) Previous Change Explanations --

Delay in SDS program due to reduction in funding by PBD 904. 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 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. SLPV 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. 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). Per 5000.2, Milestone IIIA has been changed to DAB Program Review, LRIP. "Software Support Facility Delivery" changed from Mar 95 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. The "Software Support Facility Delivery" has been defined as "Mission Software Support Facility (MSSF) Phase 1". 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. Per 5000.2, "Milestone IIIB" has been changed to "Milestone III". 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. The "Self Defense Suite (SDS) Production Decision" milestone has been deleted since SDS is an integral part of Joint STARS production decision. "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 Support Date" changed from Dec 95 to Jan 96 due to delays in E-8A testing, delays in simulator deliveries, and budgetary constraints, respectively. "SDS Test Complete" has been deleted and replaced with "First SDS Installation", defined as group A installation delivered in the first production aircraft. "PMRT" has been deleted under Integrated Weapon Systems Management (IWSM) concept. The "Last Aircraft Delivery" has been deleted to match approved Acquisition Program Baseline. RAA defined as being ready to execute maintenance concept as specified in the Integrated Logistics Support Plan. As a result of the May 93 LRIP Review, the Approved Program added the following Milestones: MOT&E Start; MOT&E Complete; Milestone III; Full Rate Production Contract Award; First Aircraft Delivery to ACC; Organic Support Capability; and Follow on OT&E

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Joint STARS, December 31, 1994

9b. (U) Schedule (Cont'd):

Start.

c. (U) Current Change Explanations --

(Ch-1) Flight/Mission Simulator Delivery changed from May 96 to Jul 96 due to delay in flight crew trainer contract award.

(Ch-2) DT&E Complete changed from Dec 94 to Sep 95, a nine month delay due to software integration development problems on the E-8C and limited radar assets shared with E-8A.

(Ch-3) MOT&E Start changed from Apr 95 to Nov 95, due to the above delay in DT&E Complete.

(Ch-4) MOT&E Complete changed from Dec 95 to Apr 96 with MOT&E compressed from eight to five months based on test requirement scrub by Tiger Team.

(Ch-5) Milestone III changed from Jan 96 to Aug 96 in conjunction with the above changes and to reinstate a four month preparation period for Defense Acquisition Board documentation.

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 May 26, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
-----------------------	----	---	----------------------------------	----------------------------

MTI detection radial
velocity (km/hr)

(b)(1)

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Joint STARS, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

		Approved Program	Demon- strated	Current
<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>	
(b)(1)				

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Joint STARS, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Reliability - MTBCF (hrs)	62	N/A / N/A	N/A	N/A
Integrated fault detection/isolation (%)	95	N/A / N/A	N/A	N/A
Fix rate				
Air (%) (min)			TBD	
in 20	N/A	50 / 3	58 (SIM)	50
in 30	N/A	75 / 7	77 (SIM)	75
in 45	N/A	90 / 25	89 (SIM)	90
Ground (%) (hrs)				
in 4	N/A	50 / 15	52 (SIM)	50
in 8	N/A	75 / 38	83 (SIM)	75
in 12	N/A	85 / 50	93 (SIM)	85
Break rate (%)	N/A	12 / 22	11.5 (SIM)	12
Communications				
Total UHF/Full anti-jam capable	N/A	12/8 / 12/4	12/0	12/4
Total HF	N/A	3 / 2	2	2
Total VHF/SINCGARS	N/A	5/4 / 3/0	3/0	3/1
SATCOM	N/A	1 / 0	0	0
Mission Reliability	N/A	.88 / .78	.915	.88

(b)(1)

(U) *NOTE- The following is required information needed to fully understand the data located in the Performance Characteristics Section 10.

(b)(1)

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10a (b)(1)

(b)(1)

(U) For Fix Rate and Break Rate: Demonstrated performance (simulated) values are based on DT&E Report for Joint STARS (S) dated 7 Apr 93.

(U) For Communications, Total UHF/Full anti-jam capable: Current Objective = 12/8; Current Threshold = 12/4.

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10a. ~~(S)~~ Performance Characteristics (Cont'd):

(U) For Comm, Total HF: Current Objective = 3, Current Threshold = 2.

(U) For Comm, Total VHF/SINGARS: Current Objective = 5/4; Current Threshold = 3/0.

(U) For Comm, SATCOM: Current Objective = 1; Current Threshold = 0.

(U) For Mission Reliability: Current Objective = 0.88; Current Threshold = 0.78.

(U) For Sortie Generation Rate: Current Objective = 1.00; Current Threshold = 0.80.

b. (U) Previous Change Explanations --

Past estimates have met threshold values set forth in DAE approved APBs dated 27 Oct 89, 6 Mar 90, and 26 May 93. Due to the Four Star Summit, the following characteristics have been deleted and are no longer reported: MTI detection radial velocity-max radial velocity, Reliability - MTBCF, Integrated fault detection/isolation, Attacks, Track Capacity. Due to the Four Star Summit, the following characteristics have been added: SAR CEP, Communications, Mission Reliability Rate, and Sortie Generation Rate.

c. (U) Current Change Explanations -- None.

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 May 26, 1993.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1448.2	2431.7	2460.1
Procurement	3192.8	3137.7	3115.5
Recurring	(2481.1)		(2327.4)
Non-Recurring	(182.7)		(13.4)
Total Flyaway	(2663.8)		(2340.8)
Other Wpn Sys	(286.4)		(394.8)
Peculiar Support	(0.0)		(38.8)
Initial Spares	(242.6)		(341.1)
Construction (MILCON)	87.8	104.6	80.3
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 83 Base-Year \$	4728.8	5674.0	5655.9
 Escalation	2013.1	2924.0	3094.9
Development (RDT&E)	(315.0)	(806.6)	(856.6)
Procurement	(1658.1)	(2063.0)	(2193.2)
Construction (MILCON)	(40.0)	(54.4)	(45.1)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6741.9	8598.0	8750.8
 b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>21</u>	<u>19</u>	<u>19</u>
Total	21	19	19

Approved Program and Current Estimate procurement quantity include two FSD aircraft refurbished in FY01.

The DAB Program Review for LRIP (May 93) approved a total of five aircraft in three lots. The March 4, 1994 Under Secretary of Defense Joint STARS Program Memorandum increased the total LRIP program to six aircraft in three lots.

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".

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11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1993.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY83\$)	5655.9	5674.0	
(2) Quantity	19	19	
(3) Unit Cost	297.68	298.63	-0.32
b. (U) Procurement			
(1) Cost (BY83\$)	3115.5	3137.7	
(2) Quantity	19	19	
(3) Unit Cost	163.97	165.14	-0.71

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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	1763.2	4850.9	127.8	6741.9
Previous Changes:				
Economic	+33.5	+425.1	+4.7	+463.3
Quantity	-	-370.1	-	-370.1
Schedule	+504.3	+259.6	-	+763.9
Engineering	+371.8	-732.9	-	-361.1
Estimating	+989.1	+767.2	+12.9	+1769.2
Other	-	-	-	-
Support	-	+36.8	-	+36.8
Subtotal	+1898.7	+385.7	+17.6	+2302.0
Current Changes:				
Economic	-3.9	-23.5	2.7	-24.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-341.3	-260.5	-22.7	-624.5
Other	-	-	-	-
Support	-	356.1	-	+356.1
Subtotal	-345.2	+72.1	-20.0	-293.1
Total Changes	+1553.5	+457.8	-2.4	+2008.9
Current Estimate	3316.7	5308.7	125.4	8750.8

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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	+308.7	+67.4	-	+376.1
Engineering	+250.2	-412.3	-	-162.1
Estimating	+649.9	+396.3	+6.3	+1052.5
Other	-	-	-	-
Support	-	+52.3	-	+52.3
Subtotal	+1208.8	-130.5	+6.3	+1084.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-196.9	-140.2	-13.8	-350.9
Other	-	-	-	-
Support	-	193.4	-	+193.4
Subtotal	-196.9	+53.2	-13.8	-157.5
Total Changes	+1011.9	-77.3	-7.5	+927.1
Current Estimate	2460.1	3115.5	80.3	5655.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic inflation indices.

Schedule: Program rephased from FY94 to FY98 to accommodate reductions. Changes due to aircraft reductions and additional funding for program completions.

Engineering: Revised FSD requirements for used vs. new aircraft.

Estimating: Adjusted 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 Operating Fund (DBOF). Reduction of Program contract

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13b. (U) Cost Variance Analysis (Cont'd):

support. Reprogramming of FY91 funds to the Sensor Fuzed Weapon Program. Addition of FY99 funding to extend Program operations. Reduction of FY92 funds to reflect contract manpower travel savings and reduction of FY90 to reflect actual costs. Ground Support Systems (GSS) rephased due to FY93 appropriation bill cut. FY94 BES Realignment of GSS and Product Improvement funds. SDS and maintenance Trainers rephased due to funding constraints in FY92 and FY93. Rephasing of Product and Readiness Improvement and deletion of CTOS restructure, DSD Blk 2B, 2nd & 3rd A/C Instrumentation. Additional programmed funds for Product Improvement, GSS, SDS, Misc efforts (RIP, Flight Crew, ECO), and SPO. FY94 appropriation bill cut reduced Engineering Change Orders. Reprogramming of FY90 and FY91 funds for FSD settlement plus-up. Across-the-board Air Force cuts. Realignment of funding from FY98/99 to FY95-97 to match DAB estimate. FY92 reprogramming for Small Business Innovative Research. Rephasing of FY95-00 effort due to inflation shortfall.

Procurement

Economic: Revised economic inflation indices.
Quantity: Reduction from 21 to 19 aircraft (IAW PMD 21, dtd 29 Jul 91).
Schedule: Deferral of 2 units to FY98. Realigned production profile from FY91-FY98 to FY92-FY99. Buy profile of 17 aircraft plus 2 refurbished stretched to FY00. Program schedule rephased per AFSARC direction extending program from FY00 to FY03.
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 contract support. Realignment of FY98 funding to reflect actual requirement. Realignment of Ground Support Systems effort from Flyaway to Other Weapon Systems. Funding changes in advance procurement in FY93 and out. Reductions to Self Defense Suite due to funding constraints. Program estimate for Flyaway increased to match revised schedule, and

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13b. (U) Cost Variance Analysis (Cont'd):

estimate for SDS revised. Revised entries/estimate to 31 Dec 91 SAR to correct variance categories. Adjusted for current and prior year escalation. Funding changes in advance procurement due to change in buy profile for FY96, 97, 00 and 01. Database plus-up for inflation estimate. Increase of 1 aircraft in FY94.

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. Program estimate for other costs (training, GSS, data) revised. Additional funds required for ICS in FY99 and FY00 due to revised production schedule. Reestimate of Peculiar Support Equipment (PSE) revised for current program. Increase to initial spares due to schedule extension. Rephasing of FY95-00 effort due to inflation shortfall. Reduction in support equipment due to across-the-board Air Force cuts.

MILCON

Economic: Revised economic inflation indices.

Estimating: Revised estimate to reflect current funding. Budgetary reduction of FY93 funds. Revised estimate due to consolidation of Main Operating Base (MOB) with depot. Reprogramming Depot ATF funding to Joint STARS. Addition of FY98 funding. Adjustment for current and prior year escalation. FY93 funding restored by Congress. Increase in funding for Main Operating Base (MOB) due to increase in facilities. Forward Operating Base changed to Forward Operating Locations. Decrease due to slower operational ramp-up. Decrease to program content due to increased inflation.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic inflation indices (Economic)	N/A	-3.9
Adjustment for current and prior year escalation (Estimating)	-0.9	-0.9
FY94 Reprogramming for Small Business Innovative Research (SBIR), F-22 UR, and Classified Program (Estimating)	-3.0	-4.3
FY95 Congressional Reduction (delayed constant source development, descope Post Delivery Test Support (PDS), and added risk to contingency support) (Estimating)	-10.0	-15.0
FY95 Small Business Innovative Research (SBIR) (Estimating)	-2.1	-3.1
Reduction in funding to support FY00-01 P3I effort (Estimating)	-181.9	-319.7
Re-estimating of FY96-00 Due to inflation (Estimating)	+1.0	+1.7
RDT&E Subtotal	-196.9	-345.2
(2) <u>Procurement</u>		
Revised economic inflation indices (Economic)	N/A	-23.5
Adjustment for current and prior year escalation (Estimating)	+3.4	+5.5
FY94 and FY95 Omnibus Reprogramming (Estimating)	-6.0	-9.6
Across-the-board Air Force adjustment to initial spares (Support)	-0.2	-0.3
FY95 Congressional Plus-Up of Airframe Buy-Out (Estimating)	+61.6	+99.9
General Reduction/Acquisition Reform (Estimating)	-2.8	-4.5
Adjustment to flyaway estimate due to inflation adjustment (Estimating)	+34.1	+66.1
AF Adjustment of savings from Advanced Buy Plus-Up (FY96-01) (Estimating)	-90.6	-164.5
Reduction to ECOs due to decrease in funding for risk (Estimating)	-10.6	-18.6
Re-estimating of FY96-05 Support Efforts for Inflation (Support)	+10.0	+18.0

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reallocation of costs between Flyaway and Other Weapon System to account for advance buy debit/credit (Estimating)	-129.3	-234.8
Reallocation of Costs between Flyaway and Other Weapon System to account for advance buy debit/credit (Support)	+129.3	+234.8
Adjustment for FY00-05 Initial Spares, Common Support Equipment, Ground Systems, and Data (Support)	+46.8	+91.3
FY96 President's Budget Changes in Initial Spares and Interim Contractor Support (ICS) (Support)	+7.5	+12.3
Procurement Subtotal	+53.2	+72.1
(3) <u>MILCON</u>		
Reduction in funding for Forward Operating Locations (FOL) (Estimating)	-12.1	-20.0
Adjustment for Current and Prior Year Escalation (Estimating)	-0.5	-0.8
Revised Economic Inflation Indices (Economic)	N/A	+2.7
Decrease in Program Content Due to Rise in Inflation (Estimating)	-1.2	-1.9
MILCON Subtotal	-13.8	-20.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

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

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
321.0	23.08	14.32	40.21	-19.01	60.25	--	20.68	139.53	460.6

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

	Initial Contract Price		
(U) <u>JSTARS - Follow-on FSD:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Grumman Aerospace, Melbourne, FL			
F19628-90-C-0197, CPIF	\$523.1	N/A	1
Award: November 2, 1990			
Definitized: October 26, 1992			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$767.9	N/A	1	\$800.6	\$841.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-23.8	\$-32.6
Cumulative Variances To Date (12/31/94)	\$-28.1	\$-21.2
Net Change	\$-4.3	\$11.4

Explanation of Change:

The current contract price changed from the last SAR submittal mainly due to the addition of Tadil-J Upgrade (POO51) for \$64.8M. There were also several overrun proposals submitted by the contractor for \$5.7M (POO45), \$1.6M (POO64), and \$3.5M (POO66) that added to the contract price. These contract additions plus an eight and a half month schedule slip have caused the program manager's estimate to increase. The schedule variance improved mainly due to material deliveries contained in Advanced Technology Work Stations, primarily with Raytheon. Also contributing to the positive turn in schedule variance were the UHF Mixed Mode, the taking of earned value for Magnavox data and reports, and drawing of material from inventory. The cost variance continued in an unfavorable trend and continues to be driven by vehicle engineering with contributions by software and systems engineering.

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15. (U) Contract Information (Cont'd):

(U) <u>Ground Support Systems:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Grumman Aerospace, Melbourne, FL					
F19628-93-C-0067, CPIF	\$79.0	N/A	1		
Award: October 28, 1993					
Definitized: N/A					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$79.2	N/A	1	\$79.2	\$79.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$3.2	\$1.1
Net Change	\$3.2	\$1.1

Explanation of Change:

The Initial Contract Price Target was erroneously reported in the 1993 SAR (due to misreading of CLIN costs and prices), and the award date was omitted. Target Price increased by \$212,500 after first award fee. This is first SAR reflecting variance from performance baseline. Contract is ahead of schedule and underrunning to date. There is no impact to the contract or to the program.

b.(U) Procurement --			Initial Contract Price		
(U) <u>LRIP Lot I:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Grumman Aerospace, Melbourne, FL					
F19628-92-C-0035, FPIF OPTION	\$129.2	\$0.0	2		
Award: April 24, 1992					
Definitized: May 28, 1993					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$506.7	\$541.7	2	\$508.8	\$506.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$1.0
Cumulative Variances To Date (12/31/94)	\$-2.1	\$-15.5
Net Change	\$-2.5	\$-16.5

Explanation of Change:

The current contract price of \$506.7M includes the FPI Full Production and Configuration Update efforts (\$417.1M). The balance, \$89.6M, includes Firm Fixed Price Over and Above (O&A) refurbishments, spares, miscellaneous work requests and fee. The

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15. (U) Contract Information (Cont'd):

unfavorable cumulative cost variance net change is attributable to Firm Fixed Price O&A work orders running slightly ahead of the contractor's negotiated position. The contractor has reflected that FFP overrun in his Estimated Price at Completion. The unfavorable cumulative schedule variance net change reflects aircraft modification being impacted by O&A efforts and material part shortages. The contractor has recognized the schedule position and is implementing a recovery plan. The plan includes the incorporation of a second shift, bi-weekly material shortage meetings, and increased staffing to support the aggressive internal schedule. There is no impact to the contract or to the program.

(U) LRIP Lot II:

Grumman Aerospace, Melbourne, FL
F19628-92-C-0035, FFP OPTION
Award: June 17, 1993
Definitized: July 14, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$75.6	N/A	2

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$424.3	N/A	2

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$424.3	\$424.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$-1.2	\$-1.6
Net Change	\$-4.2	\$-1.6

Explanation of Change:

The current target price represents the definitized Full Procurement of Aircraft P3 and P4 (\$358.1M), additional Over and Above Refurbishment costs, aircraft configuration update, and spares. The unfavorable cumulative cost variance net change reflects refurbishment and modification material received ahead of the projected cumulative spend plan. The unfavorable schedule variance net change is due to a backlog in modification effort that cannot start until associated refurbishment work is completed. Lot II Full Procurement, as well as O&A, spares, and aircraft configuration update are Firm Fixed Price Option efforts. The Target Price of \$424.3M includes fee. There is no impact to the contract or to the program.

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15. (U) Contract Information (Cont'd):

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
(U) <u>LRIP Lot III:</u>				
Grumman Aerospace, Melbourne, FL				
F19628-92-C-0035, FFP OPTION	\$123.2	N/A	2	
Award: May 10, 1994				
Definitized: N/A				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$123.2	N/A	2	\$123.2	\$123.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	<u>\$0.1</u>	<u>\$-0.6</u>
Net Change	\$0.1	\$-0.6

Explanation of Change:

Target Price includes Lot III Advanced Buy (\$114.2M) and initial Over and Above (O&A) Refurbishments (\$9.0M) of the P5 and P6 aircraft. The favorable cost variance reflects refurbishment and modification material received ahead of projected application. The unfavorable schedule variance is -3.1%. Lot III Advance Buy is a Firm Fixed Price (FFP) Option effort as are the O&A efforts which are individually negotiated FFP work orders. The Target Price of \$123.2M includes fee. There is no impact to the contract or to the program.

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: 58.3% (14 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 53.5% (\$4678.5 / \$8750.8)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY82-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2005)</u>	<u>Total</u>
RDT&E	2603.5	169.7	200.4	343.1	3316.7
Procurement	2006.7	556.3	585.9	2159.8	5308.7
MILCON	68.3	6.9	25.9	24.3	125.4
O&M	-	-	-	-	-
Total	4678.5	732.9	812.2	2527.2	8750.8

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	31.3	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	156.1	2.8
1987				256.1	300.2	300.2	300.2	2.7
1988				274.7	330.7	330.7	313.2	3.0
1989				181.9	229.6	229.6	213.0	4.2
1990				76.2	99.1	99.1	92.8	4.0

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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	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1991				172.3	232.6	232.6	222.1	4.3
1992				242.8	337.2	337.2	337.2	2.8
1993				220.5	313.4	313.4	313.4	2.7
1994				192.0	278.8	219.5	67.1	2.0
1995				115.3	172.3	24.9	1.9	2.7
1996				110.3	169.7			3.0
1997				126.4	200.4			3.0
1998				119.4	194.8			3.0
1999				28.6	48.0			3.0
2000				28.5	49.4			3.0
2001				28.5	50.9			3.0
Subtot				2460.1	3316.7	2396.8	2170.5	

Obligation and Expenditure rates are as of 31 Dec 94.

Appropriation: 3010 Aircraft Procurement, Air Force

1992				91.0	137.3	137.3	115.2	2.8
1993	2	4.7	312.9	405.3	622.9	512.7	168.8	2.7
1994	2		311.1	355.0	558.7	447.8	10.7	2.0

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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		349.0	424.3	687.8	2.0		2.7
1996	2	4.4	230.4	333.3	556.3			3.0
1997	2		244.4	340.8	585.9			3.0
1998	2		225.8	312.9	554.1			3.0
1999	2	4.3	226.8	294.2	536.7			3.0
2000	2		219.6	273.4	513.7			3.0
2001	3		207.4	250.3	484.4			3.0
2002				22.6	45.1			3.0
2003				8.0	16.5			3.0
2004				3.4	7.1			3.0
2005				1.0	2.2			3.0
Subtot	19	13.4	2327.4	3115.5	5308.7	1099.8	294.7	

Obligation and expenditure rates are as of 31 Dec 94.

Appropriation: 3300 Military Construction, Air Force

1992				13.2	18.8	18.2	11.9	2.8
1993				7.4	10.8	10.3	2.2	2.7
1994				16.2	24.4	22.4	1.5	2.0

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Joint STARS, December 31, 1994

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)

1995				9.2	14.3			2.7
1996				4.3	6.9			3.0
1997				15.7	25.9			3.0
1998				14.3	24.3			3.0
Subtot				80.3	125.4	50.9	15.6	
Grand Total	19	13.4	2327.4	5655.9	8750.8	3547.5	2480.8	

Obligations and expenditures are as of 31 Dec 94.

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (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 refurbished 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 organizational (off-equipment) 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

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18a. (U) Operating and Support Costs (Cont'd):

Repairable Support Division (RSD) Model to calculate the AF Stock Fund Life Cycle Costs. The airframe costs were estimated by the Government using the Cost-Oriented Resources Estimating (CORE) model contained in AFR 173-13, which is now AFI 65-503. 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 O&S period for Joint STARS starts with delivery of P1 in FY96 and concludes in FY18 (Ramp Up FY96 through FY03 and Steady State FY04 through FY18). The source of the data was Program Office Estimate, 23 Mar 93.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Steady State Avg Annual 15 year per year (FY04-FY18)	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

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, Software Support Facility, Maintenance Trainers, Flight Simulator, and Aircraft.

There is no antecedent system to Joint STARS; this system is a new capability.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A) 823)
PROGRAM: Sensor Fuzed Weapon

AS OF DATE: December 31, 1994

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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/YH

102 W D Avenue, Suite 168

EGLIN AFB, FL 32542-6807

COL RILEY C. SHELNOTT

Assigned: February 8, 1993

AV 872-5382 COMM (904) 882-5382

4. (U) Program Elements/Procurement Line Items:

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RDT&E:

PE 0604602F (Shared) Project 643244

PE 0604604F (Shared) Project 643086

PE 0604607F Project 642961

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

95-166 -T

~~Classified by: AFM Security Classification Guide, 7 Jan 94~~
~~Declassify on: Not subject to automatic downgrading~~
~~downgrade instructions~~

OATSD (PA) DFOLSR 95-C-061

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 3080 ICN 813520 (Air Force)
APPN 3020 ICN 273520 (Air Force)
APPN 3020 ICN 353520 (Air Force) (APPN 3011)

FY95 funding was transferred from APPN 3020 (Missile Procurement, AF) to APPN 3011 (Weapons Procurement, AF).

5. (U) Related Programs:

SUU-64/B Tactical Munitions Dispenser
CNU-411 Container
FZU-39 Proximity Sensor
SEEK EAGLE
Joint Stand-Off Weapon (JSOW)
Wind Corrected Munitions Dispenser (WCMD)

6. (U) Mission and Description:

The objective of the Sensor Fuzed Weapon (SFW) program is to develop, produce and deploy 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 primary platform for the 5,000 units is the F-16. Additional platforms are compatible. The use of the Bomb Live Unit (BLU)-108 submunition in the SFW is also planned for the Joint Stand-Off Weapon (JSOW) program.

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 authorized the SFW program to proceed into Full Scale Development (FSD) in Nov 85. The Dec 86 Selected Acquisition Report (SAR) implemented the new Development Estimate Baseline.

The program experienced test failures, schedule delays, and budget changes and was restructured in Jun 89. The restructure was approved by SAF/AQ in Nov 89 and included a Production Transition Program (PTP) to reduce cost and the risk of transitioning to production. The culmination of these events resulted in a schedule breach and a Nunn-McCurdy Program Acquisition Unit Cost (PAUC)

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Sensor Fuzed Weapon, December 31, 1994

7a. (U) Program Highlights (Cont'd):

breach. PTP completed Mar 93. As a result of PTP successes, the PTP configuration was introduced into the SFW baseline in Lot 1, two LRIP lots ahead of schedule.

Development Test and Evaluation (DT&E) testing began in Dec 88 and was successfully completed Apr 91. The SFW was certified ready for Initial Operational Test and Evaluation (IOT&E) by the Program Executive Officer (PEO) in Aug 90. IOT&E Phase 1 successfully completed Dec 91.

The Defense Acquisition Board (DAB) authorized Low Rate Initial Production (LRIP) in Mar 92 and directed the incorporation of a Producibility Enhancement Program (PEP) to further improve the producibility of the SFW design. The acquisition objective was reduced from 16,726 to 10,000 weapons resulting in a Nunn-McCurdy PAUC breach.

LRIP 1-3 contract awards occurred on schedule. LRIP 1 was awarded Mar 92 (98 weapons) and modified to incorporate LRIP 2, Jan 93 (22 weapons). LRIP 3 was awarded in Dec 93 (112 weapons).

The FY94 President's Budget (PB) reflected a quantity reduction from 10,000 to 5,000 weapons and a reduction in near-term funding. The reduced quantities and slower ramp rate resulted in a Nunn-McCurdy PAUC and an Acquisition Program Baseline (APB) Average Unit Procurement Cost (AUPC) breach.

Testing of five PTP verification units was successfully completed in Jun 93 with performance exceeding user requirements. HAVE NOTE testing, which is testing of the Bomb Live Unit (BLU)-108/B submunition in an electromagnetic environment, successfully completed in Mar 93.

The Mar 92 Acquisition Decision Memorandum (ADM) directed a status briefing on PEP. PEP status was presented to the Office of the Secretary of Defense (OSD), Conventional Systems Committee (CSC) in Nov 93.

b. (U) Significant Developments Since Last Report -- Limited numbers of Sensor Fuzed Weapon (SFW) assets have been put in inventory and are available to the user. The Low Rate Initial Production (LRIP) program experienced early test successes. LRIP 1 projectile Production Qualification Tests (PQT) were successfully completed in Jan 94. LRIP 1 SFW PQT successfully completed in Apr 94 with weapons exceeding user requirements and SFW officially entered production. The program experienced some of the normal transition to production problems. LRIP 1 experienced a Lot Acceptance Test (LAT) failure in Jun 94 for the first lot delivery. The weapon did not meet LAT requirements, however, the weapon still exceeded the user's kills-per-pass requirement. The contractor, program office and an independent team composed of senior experts aggressively worked failure analysis and corrective actions. Corrective actions were implemented in a production verification unit which successfully

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7b. (U) Program Highlights (Cont'd):

passed LAT requirements. LRIP 1 reconducted LAT in Sep 94 and the first lot was accepted following the successful LAT. Lot 2 and 3 successfully completed LAT in Oct and Nov 94.

The Producibility Enhancement Programs (PEP) are successfully meeting their planned milestones and cost goals. PEP 1 successfully completed contractor qualification testing for the Safe and Arm initiative and received preliminary certification of the device by the Joint Service, Non-Nuclear Munitions Board in Aug 94. Development of the projectile electronics has progressed well with the PEP 1 target performance equal to the current LRIP baseline design. PEP 2 Phase 1 successfully completed brassboard testing of the integrated submunition electronics and Phase 2 was awarded in Sep 94.

The FY96 PB reduced the SFW production ramp-up quantities and stretched the program two years resulting in an approximate increase of 6% to then year Average Unit Procurement Cost (AUPC).

The SFW program will satisfy all mission requirements.

c. (U) Changes Since As Of Date --

Low Rate Initial Production (LRIP) 1 experienced a second LAT failure in Jan 95. Vigorous failure investigations are ongoing and a corrective action plan is being developed.

The LRIP 4 contract (260 weapons) was awarded 11 Jan 95 with an effective date of 30 Dec 94. These units will be the PEP 1 configuration, which incorporates enhancements to the projectile.

8. (U) Threshold Breaches:

There are no breaches to the Approved AFAR Acquisition Program Baseline (APB) dated 4 Oct 93, and no Nunn-McCurdy unit cost 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

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Development Estimate	Approved Program	Current Estimate
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
Lot 3 Contract Award	N/A	DEC 93	DEC 93
Milestone III	N/A	DEC 95	DEC 95
Lot 4 Contract Award	N/A	DEC 94	JAN 95 (Ch-1)

(b)(1)

b. (U) Previous Change Explanations --

The Critical Design Review (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 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 software was finalized. The DAB Program Review, Production Contract Award, Lot 2 and 3 Contract Awards and IOC slipped 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 PB. Program Management Responsibility Transfer (PMRT) was eliminated as a milestone because it was no longer applicable following Air Force Systems Command/Air Force Logistics Command AFSC/AFLC consolidation to Air Force Material Command (AFMC). LRIP 2 and 3 contract awards were realigned to ensure that there would be no

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9b. (U) Schedule (Cont'd):

production break. The ADM dated 26 Mar 92 directed a four year 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, the IOC date was more refined. 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. Lot 1 Initial Production First Delivery was added as an approved Acquisition Program Baseline (APB) milestone.

c. (U) Current Change Explanations --

(Ch-1) Lot 4 contract award slipped 2 weeks from 31 Dec 94 to 11 Jan 95. The effective start date was 30 Dec 94.

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 October 04, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program			Demonstrated	Current
	DE	Objective/Threshold		Perf	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 B-52H, B-1, B-2
Shelf Life In Container (yr)	10	15	/ 10	TBD	10 1/
Service Life Out of Container (yr)	1	2	/ 1	3	1 1/
Weight (lb Class Munition)	1000	1000	/ 1000	925	1000
Delivery					2/
Altitude FT AGL	200	200	/ 200	228	200

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10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Altitude FT MSL	20000	20000	/ 20000	18700	20000
Attitude (degrees)	+45 to -45	+45 to -45	/ +45 to -45	+15 to -45	+45 to -45 (Compat- ible 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)
Acceleration (Gs)	-.5 to +5	+0.5 to + 5	/ +0.5 to +5	+.5 to +4	+.5 to +5
Targets	See Footnote	See Footnote	/ See Footnote	See Footnote	See Footnote

(b)(1)

ACRONYMS:

AGL: Above Ground Level
KCAS: Knots Calibrated Air Speed
MSL: Mean Sea Level
TMD: Tactical Munitions Dispenser

1/ Worldwide climatic conditions assumed for shelf and service life. Service life denotes out-of-container time, including multiple aircraft flights.

2/ 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.

3/ Primary: Main battle tanks, armored personnel carriers, and

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10a. (U) Performance Characteristics (Cont'd):

armored artillery.

Secondary: Trucks and other support vehicles.

4/ Average release of four weapons/pass versus Representative Armored Formation (RAF) target set. Includes mobility, firepower, or catastrophic kill categories. This number represents the average expected performance of dive and level deliveries for a non-countermeasured environment, based on the compilation of multiple delivery altitudes as specified in the 7 Nov 91, System Operational Requirements Document, Requirements correlation Matrix note 4 and 7, which recognizes inherent performance degradation at higher altitude. System contract specification requirements are for a single baseline delivery condition (level at 200 Ft/500 KCAS).

5/ 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, KMU-488/B, BLU-108/B submunition (10 each), and the projectile (40 each).

6/ Average release of four weapons/pass versus RAF target set. Includes mobility, firepower, or catastrophic kill categories. This number represents the average expected performance of all dive and level deliveries for multiple countermeasures for a countermeasured environment as defined in the System Threat Assessment Report (STAR) dated 3 May 91. This average is based on the compilation of multiple delivery altitudes as specified in the 7 Nov 91, System Operational Requirements Document, Requirements correlation Matrix note 4 and 7, which recognize inherent performance degradation at higher altitude.

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 Air Combat Command (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 and has been included in the SORD. Corrected administrative errors and corrected the expanded Current Estimate description erroneously left out of the Dec 91 SAR. Aircraft Compatibility was changed to add bomber aircraft. Lethality - Kills-Per-Pass (Countermeasured Environment) was added as an approved APB Performance Characteristic.

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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 October 04, 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)	80.0	135.0	135.8
Procurement	1139.8	654.9	631.7
Flyaway	(1127.7)		(628.2)
Other Weapon Systems	(12.1)		(3.5)
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	0.0	0.0
Total FY 79 Base-Year \$	1219.8	789.9	767.5
 Escalation	 1186.0	 937.8	 1059.6
Development (RDT&E)	(47.7)	(91.1)	(91.9)
Procurement	(1138.3)	(846.7)	(967.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2405.8	1727.7	1827.1

Procurement funding does not include SEEK EAGLE funding of \$16.6M.

b. (U) Quantity --

Development (RDT&E)	75	75	75
Procurement	14000	5000	5000
Total	14075	5075	5075

Note: Excludes 80 RDTE prototypes from the SAR Baseline and 80 from the Current Estimate that are not considered fully configured.

SFW was approved to enter LRIP in Mar 92. SFW LRIP consisted of 4 annual procurements for a total of 521 units, i.e., LRIP 1 - 98 units, LRIP 2 - 23, LRIP 3 - 175, LRIP 4 - 225 units.

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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:

OSD/CAIG Briefing, May 86. (Approved by OSD) (Production Estimate based on Competitive Dual Source).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 04, 1993.

12. (U) Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (OCT 93 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY79\$)	767.5	789.9	
(2) Quantity	5075	5075	
(3) Unit Cost	0.151	0.156	-2.836
b. (U) Procurement			
(1) Cost (BY79\$)	631.7	654.9	
(2) Quantity	5000	5000	
(3) Unit Cost	0.126	0.131	-3.543

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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	127.7	2278.1	0.0	2405.8
Previous Changes:				
Economic	-1.3	+162.8	-	+161.5
Quantity	+5.9	-1425.0	-	-1419.1
Schedule	-	+859.1	-	+859.1
Engineering	-	-	-	-
Estimating	+104.9	-344.8	-	-239.9
Other	-	-	-	-
Support	-	-18.2	-	-18.2
Subtotal	+109.5	-766.1	-	-656.6
Current Changes:				
Economic	0.3	-11.9	-	-11.6
Quantity	-	-	-	-
Schedule	-	66.3	-	+66.3
Engineering	-	-	-	-
Estimating	-9.8	32.8	-	+23.0
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	-9.5	+87.4	-	+77.9
Total Changes	+100.0	-678.7	-	-578.7
Current Estimate	227.7	1599.4	-	1827.1

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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	-450.3	-	-446.7
Schedule	-	+80.8	-	+80.8
Engineering	-	-	-	-
Estimating	+56.3	-154.4	-	-98.1
Other	-	-	-	-
Support	-	-8.8	-	-8.8
Subtotal	+59.9	-532.7	-	-472.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	11.6	-	+11.6
Engineering	-	-	-	-
Estimating	-4.1	12.8	-	+8.7
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	-4.1	+24.6	-	+20.5
Total Changes	+55.8	-508.1	-	-452.3
Current Estimate	135.8	631.7	-	767.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised 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; adjusted for current and prior year escalation; funds added in FY87 Appropriations Bill to accelerate SPW program development; adjusted for Air Force assessments - reduced scope of effort to accelerate SPW development; increased funds for SEEK EAGLE test requirements; increased funds for Pre-Production Process Verification, additional testing and SPO

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Sensor Fuzed Weapon, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

support requirements; increased RDT&E funds for Multi-Staged Improvement Program (MSIP); increased funds to support ACC in accomplishing the Cost & Operational Effectiveness Assessment (COEA); adjusted for program assessment (ANSER) and Air Staff Budget Authority; funds removed in order to support Desert Storm; increased for negotiated Request for Equitable Adjustments (RFEA); adjusted to equal actual expended dollars; funds moved from RDT&E to Procurement appropriation to pay for acquisition support contractors in FY96-02.

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 PMD to incorporate latest assessment of Air Force quantity requirements; total quantities reduced from 19,803 to 16,726; procurement objective reduced from 16,726 to 10,000 weapons; quantity reduced from 10,000 to 5,000 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; rephased procurement buy schedule; corrected 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 PB; schedule changes associated with decreased quantity; procurement buy schedule changed due to slower ramp up quantity; change in annual procurement buy profile which increased ramp quantities and deleted three years of procurement.

Estimating:

New pricing methodology used Risk Reduction hardware actuals; competition started two years earlier; costs savings resulted from a revised Alternate Source Strategy; estimating change associated with reduction in quantities from 19,803 to 16,726 since SAR baseline; corrected variance categorization in Dec 89 SAR; current acquisition strategy and the incorporation of production transition reflected a net savings; cost estimate updated to reflect: acquisition strategy change and

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13b. (U) Cost Variance Analysis (Cont'd):

incorporation of negotiated LRIP 1 contract; PEP reduced current flyaway costs; adjusted for current and prior inflation; LRIP1 incorporation increased subcontract actual cost; inclusion of actuals from LRIP's 1, 2, and 3 and their impact on outyear procurement.

Support: Increased data costs associated with 5,803 SFWs added to the program; price adjusted based on actuals; decreased data cost associated with the reduced quantities; decreased data costs associated with reduced hardware costs; adjusted for current and prior inflation; decreased data costs associated with three years less procurement.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	+0.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.3
Transfer of funding from RDT&E to Procurement (FY96-02) for contractor support. (Estimating)	-4.0	-9.5

RDT&E Subtotal	-4.1	-9.5
----------------	------	------

(2) Procurement

Revised escalation indices. (Economic)	N/A	-11.9
Change in annual procurement buy profile. (Schedule)	+11.6	+66.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.8	+1.7
Incorporated impact of lower production rate on outyear costs (rate effect on learning). (Estimating)	+10.1	+27.0
Additional dollars added for Producibility Enhancement Program (PEP) (Estimating)	+1.9	+4.1

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Increase in data cost associated with two additional years of procurement. (Support)	+0.2	+0.2
Procurement Subtotal	+24.6	+87.4

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	0.171	--	--	0.171	0.171

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.171	0.030	0.024	0.182	--	-0.043	--	-0.004	0.189	0.360

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --			Initial Contract Price		
(U) LRIP 1 and 2:			Target	Ceiling	Qty
Textron Defense Systems, Wilmington, MA					
F08626-92-C-0002, FPIF/FPF/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	
\$134.7	\$149.4	120	\$132.0	\$132.0	
			Cost Variance	Schedule Variance	
Previous Cumulative Variances			\$0.5	\$0.6	
Cumulative Variances To Date (11/27/94)			\$4.4	\$-1.5	
Net Change			\$3.9	\$-2.1	

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15. (U) Contract Information (Cont'd):

Explanation of Change:

The changes in Current Contract and Ceiling Price and Estimated Price At Completion for Contractor and Program Manager are due to additional funds for the Producibility Enhancement Program and amortized production Special Tooling and Special Test Equipment. Additionally, an underrun of \$2.7M is currently projected.

The Cost Variance increased due to continued effects of efficiency achieved in the production team labor cost for both Fabrication, Assembly, Inspection, and Test (FAIT) and Level of Effort (LOE) support.

The Schedule Variance decreased due to the LAT failure described in Section 7b and the related delay in acceptance of tactical units. This variance is reflected in the cost performance report with period ending 27 Nov 94.

NOTE: The FPIF portion of the LRIP contract is for the 120 weapons, the FFP is for data and warranty, the CPAF is for the PEP Phase 1 and Phase 2 (Subphase 1) efforts, and the time and materials (T&M) is for the Environmental Protection Program. Contract costs include funding for the JSOW and SEEK EAGLE programs.

(U) LRIP 3: Textron Defense Systems, Wilmington, MA F08626-94-C-0006, FPIF/FFP Award: December 30, 1993 Definitized: December 30, 1993	Initial Contract Price		
	Target	Ceiling	Qty
	\$70.9	\$79.5	112

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$78.6	\$87.2	112	\$78.6	\$78.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (11/27/94)	\$0.6	\$0.0
Net Change	\$0.6	\$0.0

Explanation of Change:

The changes to Current Target, Ceiling Price, and Estimated Price at Completion for both Contractor and Program Manager increased due to the incorporation of Phase II of the Producibility Enhancement Program.

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15. (U) Contract Information (Cont'd):

The Cost Variance increased due to the efficiencies in the manufacturing and program management Level of Effort tasks.

(U) LRIP 4:			Initial Contract Price	
	Target	Ceiling	Qty	
Textron Defense Systems, Wilmington, MA				
F08626-94-C-0006, FPIF/FFP	\$106.4	\$117.3	260	
Award: January 11, 1995				
Definitized: December 30, 1994				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$106.4	\$117.3	260	\$106.4	\$106.4

	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:

LRIP 4 is a mod to the LRIP 3 contract, but will have separate cost performance reporting. This is the first time the LRIP 4 contract has been reported in the SAR. As of this SAR, no cost reporting has been received, but will be reported in the next SAR.

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: 30.5% (\$557.9 / \$1827.1)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2002)	Total
RDT&E	227.7	-	-	-	227.7
Procurement	330.2	160.8	155.7	952.7	1599.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	557.9	160.8	155.7	952.7	1827.1

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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
1988				17.0	28.7	28.7	28.7	3.0
1989				19.2	33.9	33.9	33.8	4.2
1990				14.9	27.1	27.1	27.1	4.0
1991				12.0	22.7	22.7	22.6	4.3

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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: 3600 Research, Development, Test + Eval, AF (Cont'd)

1992				5.0	9.7	9.7	9.4	2.8
1993								2.7
1994								2.0
1995				0.8	1.6	1.3		2.7
1996								3.0
1997								3.0
1998								3.0
1999								3.0
2000								3.0
2001								3.0
2002								3.0
Subtot	75			135.8	227.7	227.4	225.6	

Appropriation: 3020 Missile Procurement, Air Force

1995	260	4.6	41.1	45.9	108.5			2.7
1996	500	1.6	64.1	66.1	160.8			3.0
1997	500	3.0	58.8	62.1	155.7			3.0
1998	794	1.2	81.3	83.0	214.2			3.0

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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: 3020 Missile Procurement, Air Force (Cont'd)

1999	740	1.1	73.2	74.7	198.7			3.0
2000	702	0.7	68.0	69.1	189.3			3.0
2001	672	0.9	63.4	64.8	182.8			3.0
2002	600	0.9	56.4	57.7	167.7			3.0
Subtot	4768	14.0	506.3	523.4	1377.7			

Procurement funding does not include SEEK EAGLE funding of \$16.6M.
(\$2.0M in FY94, \$4.2M in FY95, \$4.6M in FY96, \$1.0M in FY98, \$3.0M in
FY99, \$1.8M in FY00)

SFW FY95 Procurement funds were established in new Appropriation 3011
(Weapons Procurement, Air Force). However, SAR software does not
include this new Appropriation, therefore FY95 Procurement was left
in the Appropriation 3020 (Missile Procurement) in order to make
valid comparisons with the Dec 93 SAR.

Beginning in FY96, funding for SFW is included in Appropriation 3020
(Missile Procurement).

Appropriation: 3080 Other Procurement, Air Force

1992	98	15.4	40.7	56.3	112.9	112.9	87.4	2.8
1993	22	0.9	7.8	8.7	17.7	17.7	2.5	2.7
1994	112	10.1	33.0	43.3	91.1	88.7	6.5	2.0
Subtot	232	26.4	81.5	108.3	221.7	219.3	96.4	

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Sensor Fuzed Weapon, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

Grand Total	5075	40.4	587.8	767.5	1827.1	446.7	322.0	
----------------	------	------	-------	-------	--------	-------	-------	--

Obligations and expenditures reflect program office records as of 31 Dec 94.

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	155/155
Procurement	74/55

b. (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 Operating and Support (O&S) costs

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Sensor Fuzed Weapon, December 31, 1994

18a. (U) Operating and Support Costs (Cont'd):

are warranty testing (\$65.00), disposal costs (\$30.00), manpower (\$29.00) and second destination transportation (\$4.00). Distributing those costs over five thousand weapons with a ten year shelf life yields a cost of approximately \$128.00 (BY79\$) per weapon per year. The latest cost estimate for the O&S costs is dated 26 Jan 95.

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per SPW	Avg Annual Cost Per NO ANTECEDENT
MILPERS	0.0	N/A
WARRANTY TESTING	0.1	N/A
2nd DEST TRANS	0.0	N/A
DISPOSAL	0.0	N/A
Total	0.1	N/A

c. (U) Contractor Support Costs -- None.

There is no antecedent system. There are no contractor support costs for this weapon.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: E-2C AEW (HAWKEYE)

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):

E-2C/Carrier Based Airborne Early Warning Command and Control System

2. (U) DoD Component: Navy3. (U) Responsible Office and Telephone Number:

E-2 AND ATDS PROGRAM OFFICE

CAPT PETER A. SHEPARD *WEB*

PROGRAM EXECUTIVE OFFICER

Assigned: January 31, 1992

TACTICAL AIRCRAFT PROGRAMS (PMA-231)

AV 664-2282 x4370

WASHINGTON, DC 20361-1231

COMM (703) 604-2282 x4370

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0204152N Project E0461

PROCUREMENT:

APPN 1506 ICN 0195 (Navy)

MILCON:

PE 0204611N

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DIRECTORATE FOR FREEDOM OF INFORMATION
 AND SECURITY REVIEW (OASD-PN)
 DEPARTMENT OF DEFENSE

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E-2C AEW (HAWKEYE), December 31, 1994

5. (U) Related Programs:

C-2A Greyhound; Improved Engine (PE0604252N)

6. (U) Mission and Description:

The Grumman built E-2C "Hawkeye" is a twin-engine, carrier-based, Combat-Information-Center aircraft which extends task force defense perimeters by providing early warning of approaching enemy air and surface units and vectoring interceptors and strike aircraft to the attack. Carrying a crew of five, the E-2C also provides area surveillance, intercept, search and rescue, communication relay, and strike/air traffic control. Principal subsystems include APS-125/138/139/145 radar and ALR-73 Passive Detection Systems which allow the E-2C to detect emitters/targets well beyond radar range.

In order to take advantage of improved sensor and communication capabilities resulting from the Update Development Program (UDP II), to exploit emerging Commercial Off-The-Shelf technologies, and to address supportability issues with the current mission computer, plans and funds exist to replace the E-2C weapon system's antiquated tactical computer (which predates the E-2C aircraft). The replacement computer's hardware and software will be integrated into the onboard subsystems encompassing complex sensor inputs and outputs.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The E-2C was introduced to the fleet in 1973. The automatic overland radar target tracking and Electronic Counter Counter-Measure (ECCM) features were introduced to the fleet in 1977 with the new AN/APS-125 Radar Advanced Radar Processing Systems (ARPS). The designation of the AN/APS-125 radar was changed to the AN/APS-138 in 1983 with the production incorporation and delivery of the Total Radiation Aperture Control Antenna (TRAC-A) and other radar changes. The AN/APS-139, delivered to the fleet in December 1988, improved radar ECCM performance and increased system track capacity. The first limited production AN/APS-145 aircraft was accepted in November 1990.

Update Development Program (UDP) Group II APS-145 completed OT-IIC operational testing in November 1990. The APS-145 increases the maximum radar range, improves the identification friend or foe system, automates radar system optimization and improves radar tracking. The UDP and T56-A-427 Engine Upgrade reached OPEVAL concurrently in FY-92. The E-2C satisfies the mission needs.

The E-2C reached 90% completion on December 20, 1991 and submitted its last SAR. The approved E-2C new production began with advance procurement in FY 94. The procurement of 36 aircraft started with four aircraft being procured in FY 95, the last aircraft will be procured in FY 03.

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E-2C AEW (HAWKEYE), December 31, 1994

7a. (U) Program Highlights (Cont'd):

The current Litton L-304 Computer Processor (CP) in the E-2C is based on 1960's vintage technology. As E-2C sensors and communications systems have become increasingly sophisticated and complex, the L-304 has become saturated in terms of available memory and processing power and is unable to support the full range of sensor and communication systems computing requirements. While some piecemeal improvements have been attempted, they are still inadequate to support computer performance requirements, and the technology of the basic CP is rapidly becoming unsupportable. Continuing advances in computing technology, primarily driven by advances in commercial initiatives, allow orders of magnitude increase in computing capacity at dramatically reduced space and weight. These space and weight reductions are required to enable required upgrades including cooperative engagement capability and satellite communications. Significant growth capacity and life cycle cost savings can be realized by leveraging commercial technology advancements using an "open architecture" design philosophy with Commercial Off the Shelf components.

Studies initiated in the late 1980's confirmed the need for an upgrade to the current E-2C computer and possible upgrade approaches.

Funding was identified and a Mission Computer Upgrade (MCU) Milestone IV/II was approved by ASN(RDA) September 94, with an Engineering and Manufacturing Development (E&MD) contract for MCU development and integration signed with Grumman Aerospace Corporation November 94. Low rate initial production is scheduled for FY 97 and FY 98, and final system testing is planned for FY 99. Full rate production and Initial Operational Capability is planned for FY 00.

b. (U) Significant Developments Since Last Report --
This is the initial SAR for the reprocured E-2C program. This system will satisfy 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 dated 27 Oct 1994. There are no Nunn McCurdy unit cost breaches.

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E-2C AEW (HAWKEYE), December 31, 1994

9. (U) Schedule:

E-2C Aircraft

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
IOC	APR 92	APR 92	APR 92
Milestone III	JUN 94	JUN 94	OCT 94
FRP Contract Award	JUN 94	JUN 94	DEC 94
FOC	OCT 94	OCT 94	OCT 94
FOT&E	JUN 97	JUN 97	JUN 97
Organic Support Capability Date	JUN 98	JUN 98	JUN 98
Service Depot Support Date	JUN 99	JUN 99	JUN 99

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

The Acquisition Decision Memorandum for E-2C New Production Milestone III was approved 27 October 1994 by ASN RD&A. Approval was granted to begin E-2C Group II full rate production beginning with four aircraft in FY 95.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

Mission Computer Upgrade

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	SEP 94	SEP 94	SEP 94
Development Contract Award	SEP 94	SEP 94	NOV 94
Preliminary Design Review Complete	MAR 95	MAR 95	MAR 95
Critical Design Review Complete	SEP 95	SEP 95	SEP 95
Qualification Testing	FEB 96	FEB 96	FEB 96
First Flight of Developmental Test Aircraft	SEP 96	SEP 96	SEP 96
Navy Program Review - LRIP I	MAR 97	MAR 97	MAR 97
Low-Rate Initial Production I Contract Award	MAR 97	MAR 97	MAR 97
Navy Program Review - LRIP II	MAR 98	MAR 98	MAR 98
Low-Rate Initial Production Contract Award	MAR 98	MAR 98	MAR 98

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E-2C AEW (HAWKEYE), December 31, 1994

9a. (U) Schedule (Cont'd):

Mission Computer Upgrade

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Low-Rate Initial production, First Delivery	MAR 98	MAR 98	MAR 98
First Flight of Production Representative Aircraft	SEP 98	SEP 98	SEP 98
Navy Final DT&E (Complete)	MAY 99	MAY 99	MAY 99
Initial Operational Capability	JUN 99	JUN 99	JUN 99
Navy IOT&E Complete	DEC 99	DEC 99	DEC 99
Milestone III	NOV 99	NOV 99	NOV 99
Full Rate Production Contract Award	MAR 00	MAR 00	MAR 00
Organic Support Capability, Non-developmental Items	AUG 00	AUG 00	AUG 00
First Aircraft Equipped with FRP Unit	SEP 01	SEP 01	SEP 01
Organic Support Capability, Developmental Items	JAN 03	JAN 03	JAN 03
Service Depot Support, Developmental Item	JAN 03	JAN 03	JAN 03

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted to enter into the Engineering and Manufacturing Development phase for the Mission Computer Upgrade along with five low rate initial production units in FY 97 and three units in FY 98.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

10. (U) Performance Characteristics:

E-2C Aircraft

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Take off weight	55000	55000 / 55000	55000	55000
Length	57'6"	57'6" / 57'6"	57'6"	57'6"
Span	80'7"	80'7" / 80'7"	80'7"	80'7"

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E-2C AEW (HAWKEYE), December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

E-2C Aircraft

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Engine					
Number	2	2	/ 2	2	2
Type	T56-A- 427	T56-A- 427	/ T56-A- 427	T56-A- 427	T56-A- 427
Crew	5	5	/ 5	5	5
Speed (KIAS)					
Max Speed @13,500 ft (KIAS)	315	315	/ 315	N/A	315
Cruise Speed @ 24,540 ft.	270	270	/ 270	N/A	270
Time on Station @200 nm (hrs)	4.0	4.0	/ 4.0	N/A	4.0
Service Ceiling (ft)	28100	28100	/ 28100	N/A	28100
Passive Detection System					

(b)(1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

The Acquisition Decision Memorandum for E-2C New Production Milestone III was approved 27 October 1994 by ASN RD&A. Approval was granted to begin E-2C Group II full rate production beginning with four aircraft in FY 95.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

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E-2C AEW (HAWKEYE), December 31, 1994

10d. (U) Performance Characteristics (Cont'd):

Mission Computer Upgrade

a. (U) Performance --	DE	Approved Program		Demon-	Current
		Objective/Threshold		strated Perf	
System Weight (lbs)	150	150	/ 300	TBD	150
Load Time (seconds)	45	45	/ 270	TBD	45
In-Flight Reload (seconds)	20	20	/ 144	TBD	20
Operational Availability	0.97	0.97	/ 0.93	TBD	0.97

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted for entry into the Engineering and Manufacturing Development phase as well as five low rate initial production units in FY 97 and three units in FY 98.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

E-2C Aircraft

a. (U) Cost --	Production	Approved	Current
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	2422.0	2422.0	2402.7
Airframe & Changes	(1914.2)		(1904.2)
Engine & Accessories	(206.2)		(185.7)
Electronics	(87.5)		(86.9)
Armament & Other GFE	(5.6)		(7.6)
Total Flyaway	(2213.5)		(2184.4)
Other Weapon Systems	(141.1)		(150.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(67.4)		(67.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 94 Base-Year \$	2422.0	2422.0	2402.7

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E-2C AEW (HAWKEYE), December 31, 1994

11a. (U) Total Program Cost and Quantity (Cont'd):

E-2C Aircraft

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	542.0	542.0	532.7
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(542.0)	(542.0)	(532.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2964.0	2964.0	2935.4

b. (U) Quantity --

Development (RDT&E)		0	0
Procurement	<u>36</u>	<u>36</u>	<u>36</u>
Total	36	36	36

c. (U) Foreign Military Sales/International Cooperative Programs --
FMS

Sales to date are 4 for Israel for a total of \$158.6M; 13 for Japan for a total of \$872.6M; 6 for Egypt for a total of \$896.2M and 4 for Singapore for a total of \$324.9M. FMS sales to Taiwan total \$200.2M in support of 4 direct commercial sale (DCS) aircraft. The French have signed a Letter of Intent (LOI) for a FY 96 buy of two (2) aircraft on 16 December 1995 for \$59.7M.

International Cooperative Program

	FY 92	FY 93	FY 94	Total
	in millions)			
SD FYDP (Nunn) PE 0603790D	.225	.350	.800	1.375
EGYPT	2.880	2.880		5.760
Total	3.105	3.230	.800	7.135

d. (U) Nuclear Costs -- None

e. (U) References --

(U) Production Estimate:

The Acquisition Decision Memorandum for E-2C New Production Milestone III was approved 27 October 1994 by ASN RD&A. Approval was granted to begin E-2C Group II full rate production beginning with four aircraft in FY 95.

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E-2C AEW (HAWKEYE), December 31, 1994

11e. (U) Total Program Cost and Quantity (Cont'd):
E-2C Aircraft

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

Mission Computer Upgrade

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	205.7	205.7	225.3
Procurement	196.5	196.5	195.4
Airframe & Changes	(196.5)		(86.9)
Non-Recurring			(12.1)
Total Flyaway	(196.5)		(99.0)
Mod Spares			(10.1)
ICS Rework, Support, Other			(66.5)
Installation			(14.0)
Total Other Wpn Sys	(0.0)		(90.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(5.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 94 Base-Year \$	402.2	402.2	420.7
Escalation	81.7	81.7	80.3
Development (RDT&E)	(18.2)	(18.2)	(20.8)
Procurement	(63.5)	(63.5)	(59.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	483.9	483.9	501.0
b. (U) Quantity --			
Development (RDT&E)	3	3	3
Procurement	<u>74</u>	<u>74</u>	<u>74</u>
Total	77	77	77

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 11 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

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E-2C AEW (HAWKEYE), December 31, 1994

11e. (U) Total Program Cost and Quantity (Cont'd):

Mission Computer Upgrade

e. (U) References --

(U) Development Estimate:

The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted for entry into the Engineering and Manufacturing Development phase as well as five low rate initial production units in FY 97 and three units in FY 98.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

12. (U) Unit Cost Summary:

E-2C Aircraft

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY94\$)	2402.7	2422.0	
(2) Quantity	36	36	
(3) Unit Cost	66.742	67.278	-0.797
b. (U) Procurement			
(1) Cost (BY94\$)	2402.7	2422.0	
(2) Quantity	36	36	
(3) Unit Cost	66.742	67.278	-0.797

Mission Computer Upgrade

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY94\$)	420.7	402.2	
(2) Quantity	77	77	
(3) Unit Cost	5.464	5.223	4.600

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E-2C AEW (HAWKEYE), December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

Mission Computer Upgrade

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY94\$)	195.4	196.5	
(2) Quantity	74	74	
(3) Unit Cost	2.641	2.655	-0.560

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E-2C AEW (HAWKEYE), December 31, 1994

13. (U) Cost Variance Analysis:
E-2C Aircraft

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	2964.0	0.0	2964.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-7.0	-	-7.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-32.5	-	-32.5
Other	-	-	-	-
Support	-	10.9	-	+10.9
Subtotal	-	-28.6	-	-28.6
Total Changes	-	-28.6	-	-28.6
Current Estimate	-	2935.4	-	2935.4

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E-2C AEW (HAWKEYE), December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
E-2C Aircraft

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	2422.0	0.0	2422.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-29.1	-	-29.1
Other	-	-	-	-
Support	-	9.8	-	+9.8
Subtotal	-	-19.3	-	-19.3
Total Changes	-	-19.3	-	-19.3
Current Estimate	-	2402.7	-	2402.7

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(2) Procurement

Revised escalation rates (Economic)	N/A	-7.0
Support cost for Vapor Cycle, Mission Computer, Satcom and recovery support of GFE (Support)	+9.8	+10.9

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E-2C AEW (HAWKEYE), December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

E-2C Aircraft

(Dollars in Millions)

<u>Base-Year</u>	<u>Then-Year</u>
-29.1	-32.5

Repricing of A/C and GFE associated
with negotiated cost and transfer of
APN to RDT&E for Cooperative Engagement
Capability (CEC) effort. (Estimating)

Procurement Subtotal

-19.3

-28.6

Mission Computer Upgrade

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	223.9	260.0	0.0	483.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.1	-6.4	-	-6.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	22.3	-118.4	-	-96.1
Other	-	-	-	-
Support	-	119.7	-	+119.7
Subtotal	+22.2	-5.1	-	+17.1
Total Changes	+22.2	-5.1	-	+17.1
Current Estimate	246.1	254.9	-	501.0

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E-2C AEW (HAWKEYE), December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

Mission Computer Upgrade

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	205.7	196.5	0.0	402.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	19.6	-97.5	-	-77.9
Other	-	-	-	-
Support	-	96.4	-	+96.4
Subtotal	+19.6	-1.1	-	+18.5
Total Changes	+19.6	-1.1	-	+18.5
Current Estimate	225.3	195.4	-	420.7

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Revised escalation rates (Economic)

N/A

-0.1

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E-2C AEW (HAWKEYE), December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

Mission Computer Upgrade

(Dollars in Millions)		
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimated cost to cover transfer of APN to RDT&E for Cooperative Engagement Capability (CEC) effort (Estimating)	+19.6	+22.3
RDT&E Subtotal	+19.6	+22.2
(2) <u>Procurement</u>		
Revised escalation rates (Economic)		-6.4
Adjusted flyaway estimate to cover support requirements (Estimating)	-97.5	-118.4
Adjustment to cover support requirements (Support)	+96.4	+119.7
Procurement Subtotal	-1.1	-5.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

E-2C Aircraft

(U) Current SAR Baseline to Current Estimate --

PAUC	Changes								PAUC
(Initial Est)	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	(Current Est)
82.333	-0.194	--	--	--	-0.903	--	0.303	-0.794	81.539

Mission Computer Upgrade

(U) Current SAR Baseline to Current Estimate --

PAUC	Changes								PAUC
(Initial Est)	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	(Current Est)
6.284	-0.084	-0.001	--	--	-1.248	--	1.555	0.222	6.506

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B-2C AEW (HAWKEYE), December 31, 1994

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

			Initial Contract Price	
(U) <u>Mission Computer Upgrade:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Grumman Aerospace Corp, Bethpage, NY				
N00019-93-C-0205, CPIAF	\$155.2	\$0.0	0	
Award: November 30, 1994				
Definitized: November 30, 1994				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$155.2	\$0.0	0	\$155.2	\$155.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Cost Performance Data is not available. CPR information will be reported in the next SAR.

b. (U) Procurement --

			Initial Contract Price	
(U) <u>FY 95 PRODUCTION A/C:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
GRUMMAN AEROSPACE CORP, BETHPAGE, NY				
N00019-94-C-0020, FFP	\$231.2	\$0.0	4	
Award: December 16, 1994				
Definitized: N/A				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$231.2	\$0.0	4	\$231.2	\$231.2

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 --

Total Program

- (1) Percent Program Completed: 11.8% (2 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 11.4% (\$391.3 / \$3436.4)

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E-2C AEW (HAWKEYE), December 31, 1994

E-2C Aircraft

- (1) Percent Program Completed: 20.0% (2 yrs/10 yrs)
- (2) Percent Program Cost Appropriated: 11.0% (\$321.9 / \$2935.4)

Mission Computer Upgrade

- (1) Percent Program Completed: 11.8% (2 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 13.9% (\$69.4 / \$501.0)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2010)</u>	<u>Total</u>
RDT&E	69.4	53.0	71.3	52.4	246.1
Procurement	321.9	216.7	314.5	2337.2	3190.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	391.3	269.7	385.8	2389.6	3436.4

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

E-2C Aircraft

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2003)</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	321.9	216.7	303.3	2093.5	2935.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	321.9	216.7	303.3	2093.5	2935.4

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B-2C AEW (HAWKEYE), December 31, 1994

16b. (U) Program Funding Summary (Cont'd):

Mission Computer Upgrade

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Mission Computer Upgrade

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2010)</u>	<u>Total</u>
RDT&E	69.4	53.0	71.3	52.4	246.1
Procurement	-	-	11.2	243.7	254.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	69.4	53.0	82.5	296.1	501.0

c. (U) Program Summary -- Total Program

Fiscal Year	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
	Nonrec	Rec		Program	Oblig- ated	Ex- pende	

Appropriation: RDT&E - All Sources

1994			17.7	18.1	15.7	1.2	2.0
1995			48.9	51.3	26.0	0.4	2.7
1996			49.1	53.0			3.0
1997			64.1	71.3			3.0
1998			36.4	41.7			3.0
1999			9.1	10.7			3.0
2000							3.0
2001							3.0

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E-2C AEW (HAWKEYE), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
	Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: RDT&E - All Sources (Cont'd)

2002							3.0
2003							3.0
Subtot			225.3	246.1	41.7	1.6	

Appropriation: Procurement - All Sources

1994			36.1	37.8	25.9		2.0
1995		245.6	263.2	284.1	102.2	13.4	2.7
1996		179.4	194.9	216.7			3.0
1997	12.7	233.4	274.7	314.5			3.0
1998	3.3	240.0	288.9	340.7			3.0
1999	5.4	236.0	288.3	350.2			3.0
2000		257.8	293.6	367.4			3.0
2001		260.2	301.1	388.0			3.0
2002	24.0	300.5	356.6	473.3			3.0
2003	49.7	235.4	272.9	373.1			3.0
2004			3.7	5.2			3.0
2005			2.0	2.9			3.0
2006			2.0	3.0			3.0

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E-2C AEW (HAWKEYE), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
	Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: Procurement - All Sources (Cont'd)

2007			2.0	3.1			3.0
2008			2.0	3.2			3.0
2010			16.1	27.1			3.0
Subtot	95.1	2188.3	2598.1	3190.3	128.1	13.4	
Grand Total	95.1	2188.3	2823.4	3436.4	169.8	15.0	

c. (U) Annual Summary -- E-2C Aircraft

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy

1994				36.1	37.8	25.9		2.0
1995	4		245.6	263.2	284.1	102.2	13.4	2.7
1996	3		179.4	194.9	216.7			3.0
1997	4	9.3	227.6	264.9	303.3			3.0
1998	4		236.4	265.3	312.9			3.0
1999	4		236.0	264.2	320.9			3.0

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E-2C AEW (HAWKEYE), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

E-2C Aircraft

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2000	4		232.5	259.5	324.7			3.0
2001	4		232.3	258.3	332.9			3.0
2002	5	24.0	279.9	329.6	437.5			3.0
2003	4	49.7	231.7	266.7	364.6			3.0
Subtot	36	83.0	2101.4	2402.7	2935.4	128.1	13.4	
Grand Total	36	83.0	2101.4	2402.7	2935.4	128.1	13.4	

c. (U) Annual Summary -- Mission Computer Upgrade

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 0002 Research & Development, Navy, Other

1994				17.7	18.1	15.7	1.2	2.0
1995				48.9	51.3	26.0	0.4	2.7
1996				49.1	53.0			3.0
1997				64.1	71.3			3.0
1998				36.4	41.7			3.0

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E-2C AEW (HAWKEYE), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Mission Computer Upgrade

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0002 Research & Development, Navy, Other (Cont'd)

1999				9.1	10.7			3.0
2000								3.0
2001								3.0
2002								3.0
2003								3.0
Subtot	3			225.3	246.1	41.7	1.6	

Appropriation: 1506 Aircraft Procurement, Navy

1994								2.0
1995								2.7
1996								3.0
1997	5	3.4	5.8	9.8	11.2			3.0
1998	3	3.3	3.6	23.6	27.8			3.0
1999		5.4		24.1	29.3			3.0
2000	22		25.3	34.1	42.7			3.0
2001	24		27.9	42.8	55.1			3.0
2002	16		20.6	27.0	35.8			3.0
2003	4		3.7	6.2	8.5			3.0

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E-2C AEW (HAWKEYE), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
Mission Computer Upgrade

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2004				3.7	5.2			3.0
2005				2.0	2.9			3.0
2006				2.0	3.0			3.0
2007				2.0	3.1			3.0
2008				2.0	3.2			3.0
2009								3.0
2010				16.1	27.1			3.0
Subtot	74	12.1	86.9	195.4	254.9			
Grand Total	77	12.1	86.9	420.7	501.0	41.7	1.6	

17. (U) Production Rate Data:

E-2C Aircraft

a. (U) Deliveries (Plan/Actual) -- To Date
RDT&E 0/0
Procurement 36/36

b. (U) Approved Design-to-Cost Objective -- N/A.

Mission Computer Upgrade

a. (U) Deliveries (Plan/Actual) -- To Date
RDT&E 14/0
Procurement 74/0

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E-2C AEW (HAWKEYE), December 31, 1994

17b. (U) Production Rate Data (Cont'd):

Mission Computer Upgrade

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

E-2C Aircraft

a. (U) Assumptions and Ground Rules --

Flight Hours Per Aircraft Per Month	42
Number of Aircraft/Squadron	4
Consumption Rate, Gal/Hr	344.0
POL Cost, JP-5, Per Barrel, FY 90	35.7
Date of estimate 12/94.	

There is no antecedent program.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Squadron	Avg Annual Cost Per (Antecedent)
Personnel	6.8	N/A
O&S Consumables	4.2	N/A
Direct Depot Maintenance	1.9	N/A
Sustaining Investment	1.8	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	0.4	N/A
Total	15.1	N/A

c. (U) Contractor Support Costs -- None.

Mission Computer Upgrade

a. (U) Assumptions and Ground Rules --

No current information is available at this time for the Mission Computer Upgrade

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E-2C AEW (HAWKEYE), December 31, 1994

18b. (U) Operating and Support Costs (Cont'd):
Mission Computer Upgrade

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

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A17-JAVELIN

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: Javelin (AAMS-M)

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
Javelin (AAMS-M) Advanced Antitank Weapon System - Medium

2. (U) DoD Component: Army

Joint Participants:
USMC

3. (U) Responsible Office and Telephone Number:

Department of Army	COL Michael A. Roddy III
PEO - Tactical Missiles	Assigned: February 6, 1992
ATTN: SFAE-MSL-AM	AV 746-4266 COMM (205) 876-4266
RSA, AL 35898-5720	

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 63612 Project D308
PE 64611 Project D499

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DEPARTMENT OF DEFENSE

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Javelin (AAWS-M), December 31, 1994

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 1109 ICN 038061 (Navy)
APPN 2032 ICN CA0269 (Army)
APPN 2032 ICN HO6102 (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 --
The Milestone Decision Review I (MDR I)/Defense System Acquisition Review Council (DSARC) review process was completed with the issue of the Secretary of Defense Decision Memorandum (SDDM) on 15 May 86 authorizing the Advanced Antitank Weapon System - Medium (AAWS-M) and the AAWS-Heavy entry into the Proof of Principle (POP) phase. Three AAWS-M POP contracts, \$30 million each for a period of performance of 27 months, were awarded on 28 Aug 86 to Ford Aerospace and Communications Corporation, Hughes Aircraft Company, and Texas Instruments, Incorporated. Following successful completion of the POP program by all three contractors, the Full Scale Development (FSD)/Low Rate Initial Production (LRIP) Request For Proposal (RFP) was released on 6 Sep 88, and the proposals were received on 7 Nov 88. On 9 Feb 89, the Army announced that the Texas Instruments and Martin Marietta Imaging Infrared Fire-&-Forget (IIR F&F) technology was selected for the FSD/LRIP contract award, contingent upon Department of Army (DA) and Office of Secretary of Defense (OSD) program approval. The Under Secretary of the Army Acquisition Decision Memorandum, dated 17 Mar 89, authorized the AAWS-M to proceed into the FSD phase, subject to Defense Acquisition Board

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Javelin (AAWS-M), December 31, 1994

7a. (U) Program Highlights (Cont'd):

(DAB) review. The Secretary of Defense Acquisition Decision Memorandum (ADM) was issued on 19 Jun 89 approving entry into the FSD phase. A contract was awarded to a Texas Instruments (TI)/ Martin Marietta Joint Venture on 21 Jun 89.

Javelin was selected as the popular name for the AAWS-M Weapon System requirements. A DAB review was held 5 Dec 90 which approved a change to the Acquisition Program Baseline (APB), increasing the system weight threshold to 49.5 pounds.

As a result of cost growth and technical performance problems related to the extensive effort to maintain the success-oriented 36 month schedule, the Baseline Test directed by OSD exacerbating an already demanding (compressed) test schedule, Focal Plane Array (FPA) performance growth being slower than anticipated and weight reduction efforts being more difficult than expected, the Army Acquisition Executive (AAE) and the Defense Acquisition Executive (DAE) approved a restructured 54-month Engineering and Manufacturing Development (EMD) phase.

All Engineering and Manufacturing Development (EMD) testing (both developmental and operational - with two minor exceptions) was completed in Dec 93.

A fixed price incentive fee, Low Rate Initial Production (LRIP) I contract was awarded 23 Jun 94 to TI/Martin Javelin Joint Venture in the amount of \$204.1 M.

As a result of the 20 Jun 94 Defense Acquisition Board (DAB) review, the Army was directed to submit a Cost Reduction Plan (CRP) to OSD by 1 Sep 94 and to add an LRIP III to provide time to complete development of the new warhead. On 31 Aug 94 the Cost Reduction Plan (CRP) was approved by the Army Acquisition Executive (AAE) and forwarded to OSD. The CRP will be executed with the currently programmed funds and will significantly reduce the cost of the Javelin.

b. (U) Significant Developments Since Last Report --
A Sep 94 Selected Acquisition Report (SAR) was submitted to report schedule slips of 6 months or more, in accordance with the 20 Jun 94 DAB review.

Contract modifications were awarded for a Field Tactical Trainer (FTT) upgrade Engineering Change Proposal (ECP) and for a Basic Skills Trainer (BST) upgrade ECP. A letter contract was definitized which continues alternate warhead development and the Enhanced Producibility Program (EPP) I was implemented. The cost impacts of

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Javelin (AAWS-M), December 31, 1994

7b. (U) Program Highlights (Cont'd):

the EPP I and CRP will reduce the estimated cost below the APB cost breach threshold.

Javelin (AAWS-M) is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

On 7 Feb 1995, the proposed Acquisition Program Baseline (APB) incorporating an 11 year program with full cost reduction and quantity reductions was approved.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 7 Feb 95. However, due to changes made by Title III Federal Acquisition Streamlining Act (FASTA), 13 Oct 94 to 10 U.S.C. section 2433, there are Program Acquisition Unit Cost (PAUC) and Average Unit Procurement Cost (AUPC) Nunn-McCurdy breaches. This breach was reported in the December 1993 SAR and the Under Secretary of Defense for Acquisition and Technology certified the program in May 1994. Details are included in an expanded Section 12.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
LRIP Decision (DAB)	JUN 92	JUN 94	JUN 94
LRIP I Contract Award	JUN 92	APR 94	JUN 94

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Javelin (AAWS-M), December 31, 1994

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
LRIP II Contract Award	JUN 93	MAR 95	MAR 95
First LRIP Delivery	SEP 93	OCT 95	OCT 95
Prod Verification Test			
Start	SEP 93	OCT 95	OCT 95 (Ch-1)
Complete	FEB 94	APR 96	APR 96 (Ch-1)
LRIP III Contract Award	N/A	MAR 96	MAR 96 (Ch-2)
LRIP II Delivery	N/A	OCT 96	OCT 96 (Ch-2)
Limited User Test			
Start	N/A	APR 96	APR 96 (Ch-2)
Complete	N/A	MAY 96	MAY 96 (Ch-2)
Live Fire Test			
Start	FEB 94	JUN 96	JUN 96
Complete	MAY 94	DEC 96	DEC 96
First Unit Equipped	FEB 94	JUN 96	JUN 96

(b)(1)

Full Rate Production (ASARC)	N/A	APR 97	APR 97 (Ch-2)
Full Rate Production Contract Award	JUN 94	MAY 97	MAY 97
LRIP III Delivery	N/A	OCT 97	OCT 97 (Ch-2)
First Full Rate Production Delivery	JUN 95	OCT 98	OCT 98
Follow-on Operational Test and Evaluation			
Start	N/A	OCT 98	OCT 98 (Ch-2)
Complete	N/A	DEC 98	DEC 98 (Ch-2)
Organic Support Capability	N/A	OCT 00	OCT 00 (Ch-4)
Depot Support Capability	N/A	OCT 00	JUL 01 (Ch-5)

b. (U) Previous Change Explanations --

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. Initial Operational Test and Evaluation (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. 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. Milestone IIIB date changed from Jul 96 to Jan 96 and Full Rate Production (FRP) Contract Award changed from Jul 97 to Jan 97. Dates rescheduled for consistency with previous change rescheduling

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Javelin (AAWS-M), December 31, 1994

9b. (U) Schedule (Cont'd):

LRIP II contract award. Schedule milestone changes are a result of extending Low Rate Initial Production (LRIP) an additional year as directed by the Defense Acquisition Board's (DAB) Acquisition Decision Memorandum (ADM) dated 11 Jul 94.

c. (U) Current Change Explanations --

Ch-1 Acquisition Program Baseline (APB) dated 7 Feb 95 changed Production Qualification Test to Production Verification Test.

Ch-2 Addresses milestones introduced by Approved Program Baseline signed 7 Feb 95.

Ch-3 Milestones deleted by Approved Program Baseline signed 7 Feb 95.

Ch-4 Milestone title should be changed from Organic Support Capability to Organic Field Level Support Capability.

Ch-5 Milestone title should be changed from Depot Support Capability to Organic Depot Level Support Capability and the Approved Program date changed from Oct 00 to Jul 01.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 15, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 07, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

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Javelin (AAWS-M), December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Cmd Launch Unit MTBOMF (hrs)	126	126 / 76	77	142
Cmd Launch Unit MTTR (hrs)	<1.5	<1.5 / 1.5	.77	.77

1. (U) Minimum range (Full) and maximum range. Full lethality must be met at this range.

2. (U) Probability of hit given a reliable round (Ph/reliable round). Hit probabilities are specified for 7 km visibility (day/night) in benign environments. Must hit a fully exposed standard NATO target (2.3m H x 2.3m W x 4.6m L) stationary or moving (crossing velocity up to 20 km/hr) at all ranges (min to max). The hit probability must be attained given any attack azimuth or elevation angle (relative to target) given a shot with a reliable system.

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(b)(1)



MTBOMF - Mean Time Between Operational Mission Failures.
MTTR - Mean Time To Repair.
IOT&E - Initial Operational Test and Evaluation.

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. Current estimate values are projected performance at the Full Rate Production ASARC and were updated following completion of Engineering Manufacturing Development (EMD) testing. Missile operational reliability and Command Launch Unit (CLU) MTBOMF current estimates include incorporation of corrective actions to problems identified during IOT&E.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 15, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 07, 1995.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	549.2	718.4	716.6
Procurement	2849.6	2313.6	2349.3
Round Flyaway	(2447.2)		(1676.4)
CLU Flyaway	(240.3)		(389.2)
Total Flyaway	(2687.5)		(2065.6)
Other Weapon System	(39.0)		(142.6)
Training Devices	(96.7)		(126.6)
Total Other Wpn Sys	(135.7)		(269.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.4)		(14.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 90 Base-Year \$	3398.8	3032.0	3065.9
Escalation	537.7	999.7	972.5
Development (RDT&E)	(-1.4)	(29.2)	(28.9)
Procurement	(539.1)	(970.5)	(943.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	3936.5	4031.7	4038.4

Values shown include USMC program.

b. (U) Quantity --			
Development (RDT&E)	81	48	48
Procurement	<u>70550</u>	<u>31269</u>	<u>31269</u>
Total	70631	31317	31317

Note: Excludes 165 RDTE prototypes from the SAR Baseline and 154 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. Of the total procurement quantity shown above, 2064 rounds (FY94-703, FY95-872, and FY96-557) or 6.8% will be produced during Low Rate Initial Production (LRIP).

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

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11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 15, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 07, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 92 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	3065.9	3773.7	
(2) Quantity	31317	70550	
(3) Unit Cost	0.098	0.053	83.024
b. (U) Procurement			
(1) Cost (BY90\$)	2349.3	3083.5	
(2) Quantity	31269	70550	
(3) Unit Cost	0.075	0.044	71.901

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 92 APB)	<u>Percent</u> <u>Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	4038.4	5198.4	
(2) Unit Cost	0.129	0.074	75.007
d. (U) Procurement			
(1) Cost (TY\$)	3292.9	4474.6	
(2) Unit Cost	0.105	0.063	66.038

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Javelin (AAWS-M), December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

e. (U) Changes from the Baseline Report - Not Applicable

f. (U) Changes from the Previous SAR (SEP 94 SAR) -

	Changes in \$ or Qty	Percent Change
(1) PAUC (BY90\$)	-0.013	-11.712
(2) PAUC (BY90\$)	-0.015	-16.667
(3) PAUC Quantity	-2342	-6.958
(4) PAUC (TY\$)	-0.022	-14.570
(5) AUPC (TY\$)	-0.024	-18.605

g. (U) Initial SAR

(1) Program Acquisition Cost (BY\$) --	3398.8
(2) Program Acquisition Cost (TY\$) --	3936.5

h. (U) Unit Cost Changes.

(1) (U) PAUC --

Program Acquisition Unit Cost has Research Development Test and Evaluation (RDT&E) and Procurement components. Cost growth in RDT&E is 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. (See 12h(2) for Procurement comments.)

(2) (U) AUPC --

A major cause of the unit cost breach is the reduction in procurement quantity and delay in schedule. 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 4,669 rounds (63% decrease) and from 1,486 to 464 Command Launch Units (CLUs) (69% decrease). The USMC has also deferred the start of their procurement from Low Rate Initial Production (LRIP) II to LRIP III. The Army procurement quantities have decreased from 58,000 to 26,600 rounds (54% decrease) and from 5,000 to 2,800 Command Launch Units (CLUs) (44% decrease).

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12. (U) Unit Cost Summary (Cont'd):

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

The major cause of the unit cost breach is the procurement quantity reduction, but the schedule change also contributed. The procurement program has been stretched from 10 to 11 years and the FY 94 to FY 99 quantities were substantially reduced. The United States Marine Corps (USMC) also deferred the start of their procurement from Low Rate Initial Production (LRIP) II to LRIP III.

j. (U) Program Management and Control.

Civilian: Mr. George Williams, Program Executive Officer, Tactical Missiles

Military: Col. Michael A. Roddy III, Program 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 for the Engineering Manufacturing Development (EMD) contract in which the contractor agreed to pay 50% of the contract overrun between \$446.5M and \$494.5M. The cost area was an integral part of the Program Reviews which were held quarterly. Some work is still being accomplished on the Enhanced Producibility Program and Engineering Change Proposals (ECPs) for training devices through EMD contract modifications. A Fixed Price Incentive (FPI) contract has been signed for LRIP I.

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: 475.9
- (5) Percent contract completed (BCWP/target cost): 95.93

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Javelin (AAWS-M), December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$-4.6/-18.00%	\$-3.0/-10.30%
Previous SAR	\$-19.0/-4.25%	\$-1.2/-0.27%
Current Values	\$-19.0/-4.16%	\$-2.0/-0.43%
Change from the Baseline Report	\$-14.4/+13.84%	+\$1.0/+9.87%
Change from the Previous SAR	N/A/+0.09%	\$-0.8/-0.16%

(7) (U) Explanation of Variances. -

The Javelin EMD contract was rebaselined 31 Dec 91; consequently the cost and schedule variances were zeroed out. Current values for the cumulative cost and schedule variances are as of 31 Dec 94. The Command Launch Unit (CLU) and system engineering/program management WBS elements remain the primary drivers of the cumulative negative cost variance. The current Latest Revised Estimate (LRE) was used as the target cost. This contract will not require further SAR reporting.

(8) (U) Impact of Variances on Contract. -

None.

(9) (U) Impact of Variances on Unit Costs. -

None.

(U) (1) Contractor(s): TI/Martin JAVELIN

(2) Contract Title: LRIP I

(3) Contract Number:DAAH01-94-C-0023

(4) Actual Cost of Work Performed (ACWP) to date: 35.4

(5) Percent contract completed (BCWP/target cost): 18.20

(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	+\$1.3/+3.49%	\$-4.8/-11.54%
Previous SAR	N/A	N/A
Current Values	+\$1.3/+3.49%	\$-4.8/-11.54%
Change from the Baseline Report	N/A/0.00%	N/A/0.00%
Change from the Previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

Current values for the cumulative cost and schedule variances are as of 31 Dec 94. The Integrated Baseline Review (IBR) was performed in Nov 94. The WBS elements of the Command Launch Unit (CLU) Basic Sight, CLU Integration and Assembly (I&A), and missile are the

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12. (U) Unit Cost Summary (Cont'd):

primary drivers of the negative schedule variance.

(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

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Javelin (AAWS-M), December 31, 1994

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	547.8	3388.7	0.0	3936.5
Previous Changes:				
Economic	-2.5	+80.2	-	+77.7
Quantity	-	-1402.3	-	-1402.3
Schedule	+102.0	+758.3	-	+860.3
Engineering	+1.5	+21.2	-	+22.7
Estimating	+95.4	+1166.9	-	+1262.3
Other	-	-	-	-
Support	-	+339.4	-	+339.4
Subtotal	+196.4	+963.7	-	+1160.1
Current Changes:				
Economic	-	-47.1	-	-47.1
Quantity	-	-121.6	-	-121.6
Schedule	-	6.2	-	+6.2
Engineering	3.0	-	-	+3.0
Estimating	-1.7	-755.1	-	-756.8
Other	-	-	-	-
Support	-	-141.9	-	-141.9
Subtotal	+1.3	-1059.5	-	-1058.2
Total Changes	+197.7	-95.8	-	+101.9
Current Estimate	745.5	3292.9	-	4038.4

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Javelin (AAWS-M), December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	549.2	2849.6	0.0	3398.8
Previous Changes:				
Quantity	-	-942.1	-	-942.1
Schedule	+97.1	-	-	+97.1
Engineering	+1.3	+18.6	-	+19.9
Estimating	+67.9	+868.9	-	+936.8
Other	-	-	-	-
Support	-	+218.3	-	+218.3
Subtotal	+166.3	+163.7	-	+330.0
Current Changes:				
Quantity	-	-75.5	-	-75.5
Schedule	-	-	-	-
Engineering	2.5	-	-	+2.5
Estimating	-1.4	-491.8	-	-493.2
Other	-	-	-	-
Support	-	-96.7	-	-96.7
Subtotal	+1.1	-664.0	-	-662.9
Total Changes	+167.4	-500.3	-	-332.9
Current Estimate	716.6	2349.3	-	3065.9

b. (U) Previous Change Explanations --

RDTE

Economic: revised escalation indices.

Schedule: revised development schedule from 36 to 54 months.

Engineering: revised test plan; increased cost for additional alternate warhead program.

Estimating: adjustment for current and prior year inflation; revised estimate due to technology selection; revised estimate to reflect actual costs; lower subcontractor cost; revised subcontractor estimates; program reduced to obligated amount to close accounts in prior years; increased contractor estimate due to higher overhead rates resulting from reduced business base and slow manpower

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Javelin (AAWS-M), December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

reductions following completion of EMD.

Procurement

Economic: revised escalation indices; adjustment for negative program change.

Quantity: decrease of 4065 rounds (USMC); reduction of 2062 CLUs from 5917 to 3855; reduction of 32874 rounds from 66485 to 33611.

Schedule: revised delivery schedules; restructured program delayed procurement 1 year; revised USMC delivery schedule; revised procurement buy schedule; change in procurement buy schedule related to CLU; change in procurement buy schedule related to rounds.

Engineering: add Built In Test Equipment (BITE) to CLU; allocation resulting from quantity decrease.

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; adjustment for current and prior inflation; revised subcontractor estimates; allocation resulting from quantity decrease; revised contractor/subcontractor estimates based on LRIP I proposal.

Support: additional costs due to revised delivery schedule; increased support due to higher hardware cost; correction of SAR variances to reconcile flyaway and support cost; additional support cost due to revised delivery schedule; increase in trainer cost; added Interim Contractor Support; higher Depot Maintenance Plant Equipment cost; higher Program Management cost; decreased CLU, round and training devices requirement due to quantity reduction; adjustment for current and prior inflation.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE&</u>		
Added funding to continue alternate warhead integration. (Engineering)	+2.5	+3.0
Revised estimate to reflect actual funding. (Estimating)	-1.4	-1.7
RDTE& Subtotal	<u>+1.1</u>	<u>+1.3</u>

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Javelin (AAWS-M), December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	--	-59.1
Economic adjustment for negative program change. (Economic)	--	+12.0
Adjustment for current and prior inflation. (Estimating)	+1.6	+1.9
Reduction of 591 CLUs from 1055 to 464. (Quantity)	-54.1	-87.7
Reduction of 2342 rounds from 7011 to 4669. (Quantity)	-21.4	-33.9
Change in procurement buy schedule. (Schedule)	--	+6.2
Allocation to estimating associated with quantity changes. (Estimating)	-96.9	-154.9
Decrease due to cost reduction program. (Estimating)	-396.5	-602.1
Decrease due to change in maintenance concept to Life Cycle Contractor Support and decreased CLU and round requirement due to quantity reduction. (Support)	-96.7	-141.9
Procurement Subtotal	<u>-664.0</u>	<u>-1059.5</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.056	0.001	0.021	0.028	0.001	0.016	--	0.006	0.073	0.129

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Javelin (AAWS-M), December 31, 1994

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDTE --
 (U) FSD AAWS-M:
 TI/Martin Javelin, Lewisville, TX
 DAAH01-89-C-A012, CPIX
 Award: June 21, 1989
 Definitized: June 21, 1989

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$466.9	N/A	202	\$466.9	\$467.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-19.0	\$-1.2
Cumulative Variances To Date (12/31/94)	\$-19.0	\$-2.0
Net Change	\$0.0	\$-0.8

Explanation of Change:

The Command Launch Unit (CLU) and system engineering/program management WBS elements remain the primary drivers of the cumulative negative cost variance. In Jan 94 the Work Breakdown Structure (WBS) was changed to an abbreviated form due to the completion of all Engineering Manufacturing Development (EMD) test and evaluation activities.

The quantity represents test articles containing fully functional guidance sections. Estimate at complete includes a contractor cost sharing arrangement. Since this contract is over 95% complete, it will no longer be reported in the SAR.

b.(U) Procurement --
 (U) LRIP I:
 TI/Martin JAVELIN, Lewisville, TX
 DAAH01-94-C-0023, FPI
 Award: June 23, 1994
 Definitized: June 23, 1994

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$209.6	\$234.2	703	\$203.9	\$209.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$1.3	\$-4.8
Net Change	\$1.3	\$-4.8

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Javelin (AAWS-M), December 31, 1994

15. (U) Contract Information (Cont'd):

Explanation of Change:

The Integrated Program Baseline Review (IBPR) was completed in Nov 94. Largest schedule variances are in the missile, CLU basic sight and CLU Integration and Assembly (I & A) areas.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 47.6% (10 yrs/21 yrs)
- (2) Percent Program Cost Appropriated: 29.3% (\$1183.7 / \$4038.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RD&E	745.5	-	-	-	745.5
Procurement	438.2	171.4	190.9	2492.4	3292.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1183.7	171.4	190.9	2492.4	4038.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1986				62.0	55.1	55.1	55.1	2.8
1987				45.9	42.0	42.0	42.0	2.7

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Javelin (AAWS-M), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pend	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1988				31.0	29.5	29.5	29.5	3.0
1989				99.8	98.9	98.9	98.7	4.2
1990				132.9	136.7	136.7	136.4	4.1
1991				74.7	79.8	79.8	79.8	4.3
1992				111.7	122.3	122.3	122.2	3.0
1993				88.7	99.7	99.7	99.3	2.7
1994				41.0	47.2	46.9	35.7	2.0
1995				28.9	34.3	15.0	1.6	2.7
Subtot	48			716.6	745.5	725.9	700.3	

Appropriation: 2032 Missile Procurement, Army

1993				15.9	18.3	18.3	16.8	2.7
1994	703	38.9	140.3	175.0	207.3	188.4	0.7	2.0
1995	872	29.6	117.4	174.1	212.6	20.9	2.1	2.7
1996	557	11.6	96.6	137.6	171.4			3.0
1997	994	9.1	94.5	131.1	168.2			3.0
1998	986	6.4	88.2	120.4	159.1			3.0
1999	1160	5.7	86.3	112.6	153.3			3.0

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Javelin (AAWS-M), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2000	1516	10.1	105.0	145.8	204.4			3.0
2001	2525	17.7	154.2	204.7	295.6			3.0
2002	4231	17.9	210.6	252.5	375.6			3.0
2003	5689	16.6	235.0	268.9	412.1			3.0
2004	7367	17.4	261.9	286.5	452.2			3.0
2005			4.6	7.3	11.9			3.0
2006			4.2	5.9	9.9			3.0
Subtot	26600	181.0	1598.8	2038.3	2851.9	227.6	19.6	
Army	26648	181.0	1598.8	2754.9	3597.4	953.5	719.9	

Procurement funds in FY 1993 are for procurement of long lead time items and do not represent complete rounds. Recurring flyaway in FYs 2005 and 2006 are for System Project Management - Government and First/Second Destination Transportation cost associated with deliveries.

Appropriation: 1109 Procurement, Marine Corps

1997	119	2.5	11.9	17.7	22.7			3.0
1998	213	2.5	18.6	27.0	35.7			3.0
1999	762	8.2	52.2	64.6	87.9			3.0
2000	866	3.8	53.8	61.5	86.2			3.0

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Javelin (AAWS-M), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1109 Procurement, Marine Corps (Cont'd)

2001	812	2.0	44.1	49.4	71.4			3.0
2002	910	1.8	43.5	48.0	71.4			3.0
2003	987	1.6	38.2	40.6	62.2			3.0
2004		0.2		1.2	1.9			3.0
2005		0.1	0.8	1.0	1.6			3.0
Subtot	4669	22.7	263.1	311.0	441.0			
Navy	4669	22.7	263.1	311.0	441.0			
Grand Total	31317	203.7	1861.9	3065.9	4038.4	953.5	719.9	

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --

	<u>To Date</u>
RDT&E	202/202
Procurement	0/0

b. (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).

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Javelin (AAWS-M), December 31, 1994

18a. (U) Operating and Support Costs (Cont'd):

Interim Contractor Support (ICS) for supply support and maintenance above unit level will be utilized for the first 60 months. CLU repair will consist of complete repair of the CLU's economically repairable circuit cards, assemblies, and components. Missile repair (resulting from surveillance checks) will be performed by the system's prime contractor. The Javelin system (round and CLU) and training devices will be maintained at field and depot levels via Interim Contractor Support (ICS) or Contractor Logistics Support (CLS) contracts for the life of the system.

Fielding occurs in the 2nd year following procurement. Sustainment covers 20 (full deployment) years of operation, maintenance, and modification. Military pay and allowances represent over 56% 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.

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Javelin (AAWS-M), December 31, 1994

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 Year JAVELIN	Avg Annual Cost Per Year DRAGONII (ANTECEDENT)
PERSONNEL	46.3	113.3
O&S CONSUMABLES	0.0	0.0
DIRECT DEPOT MAINTENANCE	17.4	14.2
SUSTAINING INVESTMENT	0.1	20.9
OTHER DIRECT COST	9.1	9.5
INDIRECT COSTS	6.1	4.7
Total	79.0	162.6

Estimate includes contractor cost elements.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
ICS	10.0	5.9	8.3	41.9	66.1
CLS	---	---	---	601.8	601.8
Total	10.0	5.9	8.3	643.7	667.9

Acronyms:

ICS - Interim Contractor Support
CLS - Contractor Logistics Support

Javelin (AAWS-M) Program Office Estimate (POE), Alternative (i.e. updated quantities) to April 94 POE approved by CAIG, average over 11 Years Fully Fielded (i.e. no ramp up or draw down) Sustainment Years (FY 05 through FY 15), Army Only;

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Javelin (AAWS-M), December 31, 1994

18c. (U) Operating and Support Costs (Cont'd):

Antecedent - DRAGON II Life Cycle Cost Estimate, IAAWS COEA, Oct 1988, 33 Years Sustainment, Army Only.

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AF-17 MINUTEMAN III GRP
(PHASE I)

SECRET

SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)

PROGRAM: MNIII GRP - Phase I

AS OF DATE: December 31, 1994

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Production Rate Data	14
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1. (U) Designation and Nomenclature (Preferred Name):

Minuteman III Guidance Replacement Program

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

OO-ALC/LM

Col TERRENCE CROSSEY

6014 DOGWOOD AVENUE

Assigned: June 1, 1994

HILL AFB, UT 84056-5816

AV 458-8645 COMM (801) 777-8645

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0101213F (Shared), 0604312F, 0604851F

5. (U) Related Programs:

Rapid Execution And Combat Targeting (REACT), Single Reentry Vehicle (SRV), Propulsion Replacement Program (PRP).

~~Classified by [redacted]~~

~~Declassify on: Originating Agency, [redacted] (S&A)~~

~~Downgrade instructions: Not subject to automatic downgrade~~

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MMIII GRP - Phase I, December 31, 1994

6. (U) Mission and Description:

The Guidance Replacement Program (GRP) upgrades and extends the life of the Minuteman III guidance system through the year 2020. As a result of various arms control initiatives, the Minuteman III is projected to become the only land-based ICBM in the Triad when Minuteman II and Peacekeeper are retired. The guidance electronics will be replaced since current electronic components continue to degrade and are projected to become unreliable as early as 1997 and unsupportable as early as 1998. GRP replaces 1960's guidance system electronics and implements the flexibility to configure the missile with the Mark 21RV/W87 warhead and an advanced inertial measurement unit (IMU), if required.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

On July 29, 1992, a report was sent to Congress on the Minuteman III life extension. This report defined the requirement for replacement of the Minuteman III guidance system.

On November 5, 1992, the Joint Requirements Oversight Council (JROC) validated a Mission Need Statement (MNS) for a Future Guidance System for Intercontinental Ballistic Missiles.

In August 1993, the Air Force Systems Acquisition Review Council (AFSARC) approved Milestone I/II for GRP and the Engineering and Manufacturing Development (EMD) contract was awarded to Rockwell International on August 31, 1993.

Fact of life changes in the GRP program resulted in a deviation of Preliminary Design Review (PDR) and Critical Design Review (CDR) Acquisition Program Baseline (APB) milestone dates (PDR from Sep 94 to Aug 95; CDR from Sep 95 to May 96). An Air Force Acquisition Executive (AFAE) approved APB was signed on 5 May 94 reflecting the new dates. These deviations are not expected to impact program executability or the ability to satisfy First Asset Delivery (FAD) threshold.

The FY95 RDT&E budget line was reduced by \$26M, resulting in associated contract reduction commensurate with the funding reduction.

b. (U) Significant Developments Since Last Report --

A successful System Design Review (SDR) was conducted in February 1994 which established the basis for proceeding with preliminary design. The SDR defined the baseline design, fabrication, and support concepts. The baseline provided viable, cost-effective concepts for satisfying requirements. Rockwell responded to all category A requests for action (RFA) within 60 days. The SDR was closed out in May 1994.

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MMIII GRP - Phase I, December 31, 1994

7b. (U) Program Highlights (Cont'd):

A successful Subsequent Application Review (SAR) was conducted in April 1994. There were a few minor discrepancies, which were all corrected and verified by the resident Defense Contract Management Office (DCMO).

A Software Specification Review (SSR) was conducted in June 1994. Only six category A requests for action (RFA) were generated and all were closed out in August 1994.

An initial Aerospace Vehicle Equipment (AVE) design disclosure Technical Interchange Meeting (TIM) was conducted in Aug 94. This was the initial increment of the Interim Design Review (IDR). Rockwell identified its mechanical and electrical design approach and plans for integration testing. This IDR provided early insight into the Engineering Model (EM) design and served as a design review gate for EM long lead items including the Analog and Digital Application Specific Integrated Circuits (ASICs). Eleven action items were generated and all are completed.

The first award fee period closed in Sep 94 for both the Rockwell and the Logicon contracts. Both contractors received "excellent" ratings.

The final IDR for the Guidance System and the Electronics Package was conducted Dec 94. The objectives of reviewing the EM AVE design baseline and reaching concurrence to continue hardware fabrication were achieved. There were 27 Action Items and 2 Request for Actions (RFAs). As a result of the successful IDR, Rockwell and Honeywell have begun fabrication of the engineering models.

The program may not meet all mission requirements. The guidance electronics will be replaced at a later date than estimated to be needed to fully mitigate the projected decline in countdown and flight reliability which is projected to begin as early as 1997.

c. (U) Changes Since As Of Date --

In Jan 95, the GRP program office submitted a Program Deviation Report (PDR) because the Minuteman III GRP Phase I program will deviate from its currently approved Acquisition Program Baseline (APB), dated 5 May 94, due to program reductions and reprogramming actions. The First Article Delivery (FAD) will slip at least eight months from Nov 97 to Jul 98 and cause a schedule breach in the MM III GRP APB. The program office is working with Rockwell to replan the EMD and Production schedules to reduce future cost and schedule impacts. Replanning of the MM III GRP program will result in funding requirements in addition to those in the FY96 President's Budget (which is reported here) to move FAD, stretch the EMD schedule, and

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MMIII GRP - Phase I, December 31, 1994

7c. (U) Program Highlights (Cont'd):

maintain critical skills for the delayed production effort.

8. (U) Threshold Breaches:

There are currently schedule breaches to the Acquisition Program Baseline (APB) dated 5 May 94. A Program Deviation Report (PDR) was submitted 19 Jan 95. As soon as the schedule stabilizes, an updated APB will be submitted for approval. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone I/II AFSARC	AUG 93	AUG 93	AUG 93
Engineering and Manufacturing Development Contract Award	AUG 93	AUG 93	AUG 93
Preliminary Design Review (PDR) Complete	SEP 94	AUG 95	MAY 95 (Ch-1)
Critical Design Review (CDR) Complete	SEP 95	MAY 96	APR 96 (Ch-1)
AF QT&E			
Start	MAY 95	MAY 95	OCT 95
Complete	MAY 97	MAY 97	JUN 97
Low Rate Initial Production (LRIP) Contract Award	JUL 96	JUL 96	SEP 96 (Ch-1)
AF QOT&E Integration Demonstration Flight (IDF)	NOV 96	NOV 96	FEB 97
Milestone III AFSARC	MAY 97	MAY 97	SEP 97
First Asset Delivery (FAD) to User	SEP 97	SEP 97	JUL 98 (Ch-2)
Organic Support Capability	SEP 97	SEP 97	TBD (Ch-2)
Service Depot Support Date	SEP 98	SEP 98	TBD (Ch-2)
Initial Operational Capability (IOC)	MAR 98	MAR 98	TBD (Ch-2)

b. (U) Previous Change Explanations --

Milestone schedule dates contained in the Acquisition Program Baseline (APB) were based on SPO planning estimates made before the Engineering and Manufacturing Development contract was awarded. The contractor was only required to meet First Asset Delivery (FAD) date, but proposed different interim milestone dates, which still resulted in meeting the required FAD milestones. In addition, a protest of the contract award by the losing contractor caused a 28 day slip. Final interim milestones were negotiated in a supplemental agreement in Aug 94 and a baseline change request forwarded.

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MMIII GRP - Phase I, December 31, 1994

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

(Ch-1) These dates have been updated to reflect the impact of the stop-work order which occurred in Sep 93 and reported in the Dec 93 SAR.

(Ch-2) Due to program funding reductions and budget reprogramming decisions, First Article Delivery (FAD) will slip to the right at least eight months from Nov 97 to Jul 98 causing a schedule Acquisition Program Baseline (APB) breach and rendering the current EMD schedule unexecutable. Currently, the Organic Support Capability (OSC), Service Depot Support Date (SDSD) and Initial Operational Capability (IOC) dates have yet to be determined because the program has not been rebaselined.

d. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum dated August 31, 1993.

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated May 05, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	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:

Acquisition Decision Memorandum dated August 31, 1993.

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10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated May 05, 1994.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	423.3	423.3	385.4
Procurement	1040.3	1040.3	1010.5
Total Fly-Away	(950.9)		(947.6)
Total Weapon Other System	(6.8)		(8.7)
Peculiar Support	(47.9)		(12.6)
Initial Spares	(34.7)		(41.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 93 Base-Year \$	1463.6	1463.6	1395.9
Escalation	172.6	172.6	291.6
Development (RDT&E)	(29.0)	(29.0)	(30.6)
Procurement	(143.6)	(143.6)	(261.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1636.2	1636.2	1687.5

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>652</u>	<u>652</u>	<u>652</u>
Total	652	652	652

Note: Excludes 11 RDT&E prototypes from the SAR
Baseline that are not considered fully configured.

The LRIP quantities approved at Milestone II were 46 in the first year only. This is the only LRIP Buy.

c. (U) Foreign Military Sales/International Cooperative Programs --
None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum dated August 31, 1993.

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11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

APAE Approved Acquisition Program Baseline dated May 05, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY93\$)	1395.9	1463.6	
(2) Quantity	652	652	
(3) Unit Cost	2.141	2.245	-4.626
b. (U) Procurement			
(1) Cost (BY93\$)	1010.5	1040.3	
(2) Quantity	652	652	
(3) Unit Cost	1.550	1.596	-2.865

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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	452.3	1183.9	0.0	1636.2
Previous Changes:				
Economic	+6.5	+96.4	-	+102.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-26.0	-	-	-26.0
Estimating	-40.5	-137.7	-	-178.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-60.0	-41.3	-	-101.3
Current Changes:				
Economic	-1.7	-10.8	-	-12.5
Quantity	-	-	-	-
Schedule	-	24.7	-	+24.7
Engineering	-	-	-	-
Estimating	25.4	142.3	-	+167.7
Other	-	-	-	-
Support	-	-27.3	-	-27.3
Subtotal	+23.7	+128.9	-	+152.6
Total Changes	-36.3	+87.6	-	+51.3
Current Estimate	416.0	1271.5	-	1687.5

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	423.3	1040.3	0.0	1463.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-24.4	-	-	-24.4
Estimating	-35.6	-110.7	-	-146.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-60.0	-110.7	-	-170.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	22.1	107.4	-	+129.5
Other	-	-	-	-
Support	-	-26.5	-	-26.5
Subtotal	+22.1	+80.9	-	+103.0
Total Changes	-37.9	-29.8	-	-67.7
Current Estimate	385.4	1010.5	-	1395.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Engineering: Descope of Global Positioning System (GPS) feature from GRP and limited development of memory sizing/timing through PDR for both Advanced Inertial Measurement System (AIMS) and MK21.

Estimating: Adjustments for program requirements currently under service review.
Revised estimate due to miscellaneous program funding adjustments.

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13b. (U) Cost Variance Analysis (Cont'd):

Procurement

Economic: Revised economic escalation indicies.

Estimating: Adjustments for program requirements currently
under service review.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices. (Economic)	N/A	-1.7
Adjustment for Current & Prior Inflation. (Estimating)	+0.9	+0.9
Adjustments to reflect restoration of funds to align funding with program requirements (Estimating)	+21.2	+24.5
 RDT&E Subtotal	 +22.1	 +23.7
(2) <u>Procurement</u>		
Revised economic escalation indicies. (Economic)	N/A	-10.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.6
Change in annual procurement buy profile. Procurement buy moved from FY96 to FY97. (Schedule)	--	+24.7
Adjustments were made to reflect changes in the buy schedule and to reflect restoration of funds. (Estimating)	+107.4	+142.3
Initial Spares- Increased due to higher Aerospace Vehicle Equipment (AVE) cost estimates. (Support)	+6.9	+10.5
Peculiar Support Equipment-Cost decreased due to contractor decision to modify (rather than procure) less support equipment at a lower cost. (Support)	-35.3	-40.3

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Other Weapons Systems-Cost increased due to more detailed logistical support analysis of optimal trainer requirements. (Support)	+1.9	+2.5
 Procurement Subtotal	 +80.9	 +128.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.510	0.139	-0.001	0.038	-0.040	-0.016	--	-0.042	0.078	2.588

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) MMIII GRP - Electronics:

Rockwell International, Anaheim, CA
F04704-93-C-0020, CPAF
Award: August 31, 1993
Definitized: August 31, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$253.2	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$260.4	N/A	0	\$260.4	\$265.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (01/25/95)	\$-1.2	\$-0.8
Net Change	\$-1.2	\$-0.8

Explanation of Change:

The reason for the drop in current target price from \$262.4 to \$260.4 resulted from a formal agreement reached between the contractor and the government to cancel the Global Positioning System (GPS) option from the Guidance Replacement Program (GRP).

The net change in cost of \$-1.2 is a result of higher costs in the

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15. (U) Contract Information (Cont'd):

Missile Guidance Set Electronic Computer Test Station (METS) due to design changes and rework. Specifically a delay of the Missile Guidance Set Controller (MGSC) design delayed the MGSC board fabrication start date and caused higher depot support equipment and higher indirect costs than planned.

The net change in schedule of \$-0.8 is a result of delays in parts development of the Missile Guidance Set (MGS) design and Aerospace Vehicle Equipment (AVE). Specifically loss of software critical skills resulted in delay of the Gyro Stabilize Platform/Missile Guidance Set Controller (GSP/MGSC) test station availability. In turn, design evolution in the AVE hardware has driven changes in the associated support equipment. Workers took longer than expected to become proficient in the use of support equipment and controls. AVE schedule changes caused a delay in defining the Interface Control Drawings (ICDs) to support Preliminary Design Review (PDR).

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 30.0% (3 yrs/10 yrs)

(2) Percent Program Cost Appropriated: 13.3% (\$225.1 / \$1687.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY93-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RDT&E	225.1	120.8	70.1	-	416.0
Procurement	-	-	107.5	1164.0	1271.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	225.1	120.8	177.6	1164.0	1687.5

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1993				49.4	50.4	50.4	43.8	2.7
1994				81.0	84.5	80.5	53.9	2.0
1995				84.1	90.2	22.3	0.1	2.7
1996				109.3	120.8			3.0
1997				61.6	70.1			3.0
Subtot				385.4	416.0	153.2	97.8	

Appropriation: 3020 Missile Procurement, Air Force

1996								
1997	46	27.7	57.8	91.1	107.5			3.0
1998	146	30.7	194.2	248.8	302.3			3.0
1999	168	29.5	211.9	256.5	321.1			3.0
2000	168	29.7	200.1	240.7	310.2			3.0
2001	124	25.1	137.3	169.7	225.4			3.0
2002		3.6		3.7	5.0			3.0
Subtot	652	146.3	801.3	1010.5	1271.5			
Grand Total	652	146.3	801.3	1395.9	1687.5	153.2	97.8	

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16c. (U) Program Funding Summary (Cont'd):

Expenditures and Obligations reflect program office records as of December 31, 1994.

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) -- None.

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The concept of operations is based on 500 deployed guidance systems which operate continuously. This is a modification to the current guidance system. As such Operating and Support (O&S) costs are not new. Calculations are based on historical guidance repair data, which has varied little since Minuteman III was fielded in the early 1970s. Personnel costs are based on the current manning levels associated with guidance system repair. These levels will not change because maintenance personnel have multiple tasks/qualifications that drive overall manning requirements. Repair costs are calculated as the number of projected annual repairs, multiplied by the unit repair cost. Unit level consumption costs are based on costs associated with deployment of missile wing personnel to missile sites to remove and replace guidance systems, and the annual user costs associated with maintaining guidance related maintenance support equipment. Repair and unit level consumption costs will decrease as a result of this modification. The increase in reliability of the electronics will result in fewer guidance system repairs and fewer maintenance actions by field personnel. NOTE: The calculated costs to repair the guidance set compares system level Missile Guidance System (MGS) repair. O&S data was extracted from the Program Office routine annual update Jan 95.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Year Current System	Avg Annual Cost Per Year Antecedent System
Personnel	3.5	3.5
Repair Costs	16.8	24.4
Unit Level Consumption	4.1	4.5
Total	24.4	32.4

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	---	---	432.4	432.4
Total	---	---	---	432.4	432.4

Contractor support costs reflect those sustaining engineering costs that are associated with support of the Missile Guidance System (MGS) to the year 2020. Costs also include the effort estimated to be required for software changes to associated guidance depot support equipment. Contractor Support cost changed from \$258.8 (BY\$) to \$432.4 (TY\$) to correctly report then year Operating and Support (O&S) reporting requirements. Estimates assume O&S costs will not occur until the Guidance Replacement Program (GRP) deploys assets in FY98.

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AF-10 JDAM

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JDAM

AS OF DATE: December 31, 1994

SUBJECT	PAGE
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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 OL/YU	GM-15 TERRY LITTLE
Joint Direct Attack Munition	Assigned: January 6, 1992
102 West D Ave Suite 168	AV 872-3525 x 3005
Eglin AFB, FL 32542-6807	COMM 904-882-3525 x 3005

4. Program Elements/Procurement Line Items:

RDTE&:

PE 0604618F (Shared) JDAM and PIP

PE 0604618N (Shared) JDAM and PIP

Air Force and Navy RDTE& funding includes the Product Improvement Program (PIP).

5. Related Programs:

Joint Programmable Fuze (JPF), Joint Stand-Off Weapon (JSOW), DSU-33 (Air Force Only), 500 pound Close Air Support (CAS) (Navy Only),

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DIRECTORATE FOR THE JOURNAL OF INFORMATION
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DEPARTMENT OF DEFENSE

SAF/PAS

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OATSD (PA) DFOISR 95-c-056

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5. Related Programs (Cont'd):

B-1B, B-2, F/A-18C/D, F-22, F-16C/D, F-15E, B-52H, F-117A, F-14A/B/D, F/A-18E/F, P-3, S-3, and AV-8B.

6. Mission and Description:

The Air Force and Navy do not intend for the Joint Direct Attack Munition (JDAM) to replace any existing weapon system. Operation DESERT STORM confirmed the need for a more accurate weapon delivery capability in adverse weather conditions and from medium/high altitudes. Failure to satisfy this requirement will allow the enemy to continue to take advantage of the sanctuary of weather and/or prevent United States air power from prosecuting a conflict on its terms. The JDAM is an Air Force and Navy munitions program to correct these shortfalls, with the Air Force as the Executive Service. JDAM will upgrade the existing inventory of general purpose bombs (MK-84, BLU-109/B, and MK-83) by integrating them with a guidance kit consisting of a global positioning system (GPS) aided inertial navigation system (INS). JDAM will provide an accurate (13 meters) adverse weather capability. The primary platforms for the JDAM development are the B-1B, B-2, F/A-18C/D and the F-22 (for the MK-83 only). The Services will certify other aircraft (e.g. F-16, F-15E, S-3, P-3, AV-8B) to deliver JDAM after JDAM development is over and money becomes available. The JDAM Product Improvement Program (PIP) will field improvements to the JDAM system, with emphasis on attaining precision (3 meters) accuracy through both non-seeker and seeker initiatives. JDAM development will proceed in a two-phased Engineering and Manufacturing Development (EMD) effort. EMD Phase I will emphasize competitive design and manufacturing processes. EMD Phase II will emphasize full scale hardware build and flight test to verify system performance and will also support Operational Test and Evaluation (OT&E).

7. Program Highlights:

a. Significant Historical Developments --

The Joint Requirements Oversight Council (JROC) approved the Mission Need Statement (TAF-401-91) on 5 March 1992. A Milestone (MS) 0 Defense Acquisition Board (DAB) met on 8 June 1992 and directed planning for the basic Joint Direct Attack Munition (JDAM) program for a MS I/II DAB review and directed JDAM 3 planning for MS I. The Air Force obtained approval from OUSD(A&T) to seek a modified MS I for JDAM in lieu of the MS I/II. The modified MS I DAB review was successfully completed 1 October 1993. JDAM 3 was redesignated as a Product Improvement Program (PIP) November 1993 to concurrently conduct risk reduction efforts toward providing a precision capability to the basic JDAM.

The MS I Acquisition Decision Memorandum (ADM) was signed 1 December 1993.

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7a. Program Highlights (Cont'd):

The A-6E aircraft was deleted from Related Programs per Chief of Naval Operations letter dated 2 February 1994.

b. Significant Developments Since Last Report --

The Joint Direct Attack Munition (JDAM) Engineering and Manufacturing Development (EMD) Phase I contracts were awarded on 11 April 1994 to Martin Marietta and McDonnell Douglas.

In May 1994, the Chief of Staff of the Air Force reconfirmed the requirement for B-1/JDAM integration. Subsequently, however, the FY95 Omnibus reprogramming bill did not include B-1 funds for JDAM integration, as requested. In addition, JDAM FY95 funding was reduced by \$17.5M which included funds for B-1/JDAM integration. These actions slipped the current JDAM/B-1 Development Test and Evaluation (DT&E) flight test schedule by four months. During November 1994, agreement was reached with the Director for Operational Test and Evaluation (DOT&E) staff that the level of testing without additional B-1 drops is adequate to enter Low Rate Initial Production (LRIP).

In June 1994, JDAM initiated an accelerated, one year program to demonstrate the potential of wide area differential Global Positioning System (GPS) as a way to improve JDAM's accuracy. The program, Exploitation of Differential GPS Guidance Enhancement (EDGE), will culminate in five demonstration drops. If the concept works, it, along with improvements in target location error, could improve JDAM accuracy to the 6 - 8 meter circular error probable category. The demonstration program is on schedule.

In response to Congressional concerns related to GPS jamming, the program office briefed the Defense Science Board (DSB) on 26 July 1994 on JDAM GPS capabilities. The DSB concurred with the JDAM design approach.

Contract modifications to incorporate acquisition streamlining initiatives were completed in August 1994. All military specifications and standards were eliminated.

Martin Marietta successfully conducted a Preliminary Design Review on their JDAM System in September 1994.

The Federal Acquisition Streamlining Act of October 1994 designated the JDAM program as a Defense Acquisition Pilot Program.

The JDAM Program Management Directive (PMD) 2321(2)/PE 0604618F/PE 0207583, dated 12 August 1993, added the S-3, P-3, and AV-8B as

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7b. Program Highlights (Cont'd):

potential platforms and FMD 2321(4), dated 16 November 1994, deleted the F-111F as a JDAM platform.

The program is expected to satisfy all mission requirements.

c. Changes Since As Of Date --

McDonnell Douglas successfully conducted a Preliminary Design Review on their JDAM System in January 1995.

8. Threshold Breaches:

There is currently no Approved Acquisition Program Baseline. The Acquisition Program Baseline (APB) was forwarded for approval on 5 December 1994. Nunn-McCurdy unit cost reporting is not required for Pre-Milestone II programs, in accordance with Title 10, United States Code, Section 2433.

9. Schedule:

a. Milestones --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0	JUN 92	N/A	JUN 92
Milestone I	OCT 93	N/A	OCT 93
Dem/Val Contract Award	APR 94	N/A	APR 94
Critical Design Review Complete	AUG 95	N/A	AUG 95
Production Readiness Review #1	SEP 95	N/A	N/A
Milestone II	OCT 95	N/A	OCT 95
Exercise EMD Contract Option	OCT 95	N/A	OCT 95
DT&E/TECHEVAL			
Start (Flight Tests)	OCT 95	N/A	OCT 95
Complete (2000 lb Kit)	FEB 98	N/A	MAY 98
Complete (1000 lb Kit)	JUL 98	N/A	JUL 98
Operational Assessment			
Start	MAY 96	N/A	OCT 95
Complete	APR 97	N/A	JUN 97
First Guided Flight	JUN 96	N/A	N/A
IOT&E/OPEVAL			
Start	APR 97	N/A	APR 97
Complete (2000 lb Kit)	FEB 99	N/A	FEB 99
OT&E/OPEVAL			
Complete (1000 lb Kit/F-22)	SEP 01	N/A	SEP 01
Production Readiness Review #2	JUL 97	N/A	N/A
Exercise LRIP-1 Option	OCT 97	N/A	OCT 97
Organizational Organic Support Capability	APR 98	N/A	APR 98

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
LRIP-2 Contract Award	OCT 98	N/A	OCT 98
LRIP-1 Production First Delivery	JAN 99	N/A	JAN 99
AUR Depot Support Capability	APR 99	N/A	JAN 99
Milestone III	JUL 99	N/A	JUL 99
Required Assets Availability	N/A	N/A	TBD
Initial Operational Capability	SEP 99	N/A	SEP 99
Full Rate Production Contract Award	OCT 99	N/A	OCT 99
Component Depot Support Capability	APR 00	N/A	APR 00
Milestone I JDAM PIP	N/A	N/A	DEC 98

The Selected Acquisition Report (SAR) Baseline has been adjusted to reflect the Milestone I Decision dated 1 October 1993.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

NOTE: Required Assets Availability (RAA) and Milestone I JDAM PIP milestones were added and are considered to be significant milestones by the program office. The RAA milestone date will be provided once Air Combat Command (ACC) identifies what is required for RAA.

d. References --

Planning Estimate:
FY95 President's Budget (PB) dated 7 February 1994.

Approved Program: None.

10. Performance Characteristics:

a. Performance --	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Weather Capability	Adverse	N/A / N/A	TBD	Adverse
Accuracy (CEP) (Meters)				
With GPS, Impact	13	N/A / N/A	TBD	13
Angles > 60 Deg				Against Horizon- tal Targets

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10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Without GPS, Impact Angles >60 Deg	N/A	N/A	/ N/A	TBD	30 Against Horizontal Targets
Inflight Re-targeting Capability (captive carry)	Yes	N/A	/ N/A	TBD	Yes
Carrier Operability	Yes	N/A	/ N/A	TBD	Yes
Warhead Compatibility	MK-84, BLU-109, MK-83	N/A	/ N/A	TBD	BLU-109, MK-84, MK-83 (F-22 Only)
Aircraft Compatibility Bomber	B-1B, B-2	N/A	/ N/A	TBD	B-1B, B-2
Fighter Attack	F-22, F/A-18C/D	N/A	/ N/A	TBD	F/A-18C/D, F-22 (MK-83 Only)
USD(A&T) RISK ASSESSMENT ITEMS:					
Footprint (20,000 MSL/.8 Mach/Level)					
Downrange Limits (NM)	N/A	N/A	/ N/A	TBD	TBD
Crossrange Limits (NM)	N/A	N/A	/ N/A	TBD	TBD
Mission Reliability In-Flight (%)	N/A	N/A	/ N/A	TBD	TBD
Built-In-Test (BIT) (Fault Detection)	N/A	N/A	/ N/A	TBD	TBD
JDAM PIP Accuracy (CEP) (Meters)	3	N/A	/ N/A	TBD	3
JDAM PIP Weather Capability	N/A	N/A	/ N/A	TBD	Adverse
JDAM PIP Warhead Compatibility	MK-84, BLU-109	N/A	/ N/A	TBD	BLU-109, MK-84

The SAR Baseline has been adjusted to reflect the Milestone I Decision dated 1 October 1993.

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10a. Performance Characteristics (Cont'd):

- 1/ Adverse weather is defined as natural/man-made conditions such as rain, haze, dust, smoke, fog, snow, ice, wind, and/or clouds that preclude the use of current inventory munitions.
- 2/ The target location error portion of the total system error is assumed to be 7.2 meters. For impact angles below 60 degrees (with GPS updates) accuracy degradation up to 19 meters CEP against horizontal targets is an objective. If GPS is denied due to jamming/spoofing, the objective accuracy is 30 meters CEP against vertical targets for impact angles greater than 60 degrees.
- 3/ In-flight programming/targeting will be possible through MIL-STD-1553/1760 data bus interface to the weapon from existing aircraft stores management hardware and modified software.
- 4/ JDAMs will be capable of withstanding aircraft carrier catapult launches and arrested landings.
- 5/ Compatibility with the S-3, P-3, and AV-8B will be addressed as follow-on integration efforts when these requirements are better defined. The A-6E aircraft was deleted by Chief of Naval Operations (CNO) Letter, Serial Number N880D5/4UG59112, dated 2 February 1994. The F-111F has been deleted (Reference AF/XOR Message 260111Z January 1994).
- 6/ F-22 compatibility will be limited to internal carriage of the MK-83 configuration.
- 7/ The Acquisition Decision Memorandum, dated 1 December 1993, directed that threshold values associated with risk assessment items be listed as TBD's until they are defined no later than Milestone II.
- 8/ Reliability requirement applies to the guidance kit only. Warhead and fuzes are not included. In-flight reliability is the probability that the guidance kit can perform its intended mission after separation from the aircraft.
- 9/ Fault detection rate calculated as the number of failures correctly detected by BIT divided by the total number of actual system failures.

ACRONYMS: BIT - Built-In Test
CEP - Circular Error Probable
DEG - Degree
DEL - Delete
GPS - Global Positioning System
MSL - Mean Sea Level

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10a. Performance Characteristics (Cont'd):

PIP - Product Improvement Program

TBD - To Be Determined

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

JDAM Joint Operational Requirements Document dated 13 May 1993.

Approved Program: None.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	611.2	0.0	730.1
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 93 Base-Year \$	611.2	0.0	730.1
Escalation	70.3	0.0	139.4
Development (RDT&E)	(70.3)	(0.0)	(139.4)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	681.5	0.0	869.5

The SAR Baseline has been adjusted to reflect the Milestone I Decision dated 1 October 1993. Changes between the Initial SAR Baseline and the Milestone I Baseline are a result of awarding the EMD Phase I contracts and a revised cost estimate supporting a better defined JDAM PIP.

b. Quantity --

Development (RDT&E)	378	N/A	533
Procurement	<u>0</u>	<u>N/A</u>	<u>N/A</u>
Total	378	N/A	533

Note: Excludes 194 RDTE prototypes from the SAR Baseline and 201 from the Current Estimate that are not considered fully configured.

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11b. Total Program Cost and Quantity (Cont'd):

The increase of fully configured prototypes from 378 in the SAR Baseline to 533 in the Current Estimate is due to additional funding in FY96 to buy 150 additional assets for the B-2 initial capability. Also, five additional assets (previously planned as a separate line item) will be used as flyable weapon simulators.

c. Foreign Military Sales/International Cooperative Programs --
To be determined.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

FY95 President's Budget dated 7 February 1994.

Approved Program: None.

12. 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	681.5	0.0	0.0	681.5
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-3.1	-	-	-3.1
Quantity	13.0	-	-	+13.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	178.1	-	-	+178.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+188.0	-	-	+188.0
Total Changes	+188.0	-	-	+188.0
Current Estimate	869.5	-	-	869.5

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	611.2	0.0	0.0	611.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	11.8	-	-	+11.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	107.1	-	-	+107.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+118.9	-	-	+118.9
Total Changes	+118.9	-	-	+118.9
Current Estimate	730.1	-	-	730.1

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-3.1
Variance resulting from increase in Air Force procurement of 150 additional assets. (Quantity)	+11.8	+13.0
Adjustment for Current & Prior Inflation. (Estimating)	+1.1	+1.1

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Funding increase due to inclusion of Air Force funding for follow-on PIP efforts (FY00-FY12) beyond PIP MS I in FY99. (Estimating)	+209.1	+291.9
Decrease in costs due to redefining the Air Force PIP in FY93-99. (Estimating)	-98.8	-111.7
Decrease of Navy funding due to Small Business Innovative Research and revision of Navy cost estimate. (Estimating)	-4.3	-3.2
RDT&E Subtotal	+118.9	+188.0

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

JDAM:
Martin Marietta Corp, Orlando, FL
F08626-94-C-0002, CPAF
Award: April 11, 1994
Definitized: April 11, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$13.8	\$0.0	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$	\$		\$	\$
Previous Cumulative Variances			\$	\$
Cumulative Variances To Date (12/31/94)			\$	\$
Net Change			\$0.0	\$0.0

<u>Cost Variance</u>	<u>Schedule Variance</u>
----------------------	--------------------------

Explanation of Change: None.

This is the first time this contract is reported in the SAR.

The Source Document for this contract is the Contractor's Internal Performance System.

Contract cost performance information is, because of the competitive nature of Phase I, SOURCE SELECTION SENSITIVE. This information is

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15. Contract Information (Cont'd):

provided to the Air Force Program Executive Office for Conventional Strike (AFPEO/TS) and will be available on request. After the downselect and MS II (October 1995) we will provide cost performance information.

JDAM has an Average Unit Procurement Price Requirement (AUPPR) as part of the technical specification. Martin Marietta has proposed an aggressive unit procurement price requirement and is devoting a substantial portion of the first 18 months effort to doing what is necessary to meet the requirement.

The major development challenge will be keeping the JDAM test program and aircraft Operational Flight Program (OFP) development in harmony. A schedule problem in the OFP development process, which the respective aircraft program offices manage, could have a major impact on the JDAM program's cost performance.

<u>JDAM:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
McDonnell Douglas Corp, St Louis, MO					
F08626-94-C-0003, CPAF	\$35.0	\$0.0	0		
Award: April 11, 1994					
Definitized: April 11, 1994					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$	\$		\$	\$
Previous Cumulative Variances			\$	\$
Cumulative Variances To Date (12/31/94)			\$	\$
Net Change			\$0.0	\$0.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date (12/31/94)	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change: None.

This is the first time this contract is reported in the SAR.

The Source Document for this contract is the Contractor's Internal Performance System.

Contract cost performance information is, because of the competitive nature of Phase I, SOURCE SELECTION SENSITIVE. This information is provided to the Air Force Program Executive Office for Conventional Strike (AFPEO/TS) and will be available on request. After the downselect and MS II (October 1995) we will provide cost performance information.

JDAM has an AUPPR as part of the technical specification. McDonnell

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15. Contract Information (Cont'd):

Douglas has proposed a conservative unit procurement price requirement and is devoting a substantial portion of the first 18 months effort to aggressively reduce their AUPPR.

The major development challenge will be keeping the JDAM test program and aircraft OFP development in harmony. A schedule problem in the OFP development process, which the respective aircraft program offices manage, could have a major impact on the JDAM program's cost performance.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 15.0% (3 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 24.1% (\$209.7 / \$869.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY93-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2012)</u>	<u>Total</u>
RDT&E	209.7	126.2	119.0	414.6	869.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	209.7	126.2	119.0	414.6	869.5

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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: 1319 Research, Development, Test + Eval, Navy

1993				22.8	23.2	22.9	21.4	2.7
1994				7.6	7.9	7.9	6.0	2.0
1995				23.3	24.9	6.1		2.7
1996				30.9	34.0			3.0
1997				29.2	33.1			3.0
1998				10.2	11.9			3.0
1999				6.3	7.6			3.0
2000				7.5	9.3			3.0
2001				12.1	15.4			3.0
Subtot	117			149.9	167.3	36.9	27.4	
Navy	117			149.9	167.3	36.9	27.4	

Funding reflects the FY96 PB dated 6 February 1995. Funding changed due to program adjustments during the FY96 PB cycle and a revised program cost estimate. Although the Navy Program Element (PE) includes monies for the Joint Programmable Fuze (JPF), JPF funding is not included in this Navy Funding Summary because it is not part of the JDAM program.

Expenditures and Obligations reflect program office records as of 31 December 1994.

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15c. 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: 3600 Research, Development, Test + Eval, AF

1993				21.1	21.5	21.4	16.1	2.7
1994				62.6	65.3	60.3	20.5	2.0
1995				62.3	66.9	13.0	0.6	2.7
1996				83.4	92.2			3.0
1997				75.5	85.9			3.0
1998				40.4	47.3			3.0
1999				25.8	31.2			3.0
2000				4.2	5.2			3.0
2001				3.8	4.9			3.0
2002				46.5	61.3			3.0
2003				55.6	75.5			3.0
2004				39.3	55.0			3.0
2005				27.8	40.0			3.0
2006				13.5	20.0			3.0
2007				3.9	6.0			3.0
2008				3.8	6.0			3.0
2009				3.7	6.0			3.0
2010				2.4	4.0			3.0

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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: 3600 Research, Development, Test + Eval, AF (Cont'd)

2011				2.3	4.0			3.0
2012				2.3	4.0			3.0
Subtot	416			580.2	702.2	94.7	37.2	
USAF	416			580.2	702.2	94.7	37.2	
Grand Total	533			730.1	869.5	131.6	64.6	

Funding reflects the FY96 PB dated 6 February 1995. Funding was increased in FY96 \$13M to buy an additional 150 assets for the B-2 initial capability. Also, the PIP program was redefined and includes funding through FY12.

Expenditures and Obligations reflect program office records as of 31 December 1994.

17. Production Rate Data:

a. Deliveries (Plan/Actual) -- None.

Delivery units are SOURCE SELECTION SENSITIVE because of the competitive nature of Phase I. This information will be available to the Air Force Program Executive Office for Conventional Strike (AFPEO/TS) on request. We will report deliveries in the SAR after downselect and MS II (October 1995).

b. Approved Design-to-Cost Objective --
N/A 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(O&A) 823)

PROGRAM: UHF FOLLOW-ON

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

UHF Follow-on Communications Satellite System

2. DoD Component: Navy3. Responsible Office and Telephone Number:

PEO for Space, Comms & Sensors	Mr. William R. Coffman
Communications Satellite Program	Assigned: February 1, 1988
2451 Crystal Drive	AV 332-2879 COMM (703)-602-2879
Arlington, VA 22245-5200	

4. Program Elements/Procurement Line Items:

PROCUREMENT:

APPN 1507 ICN 30243000 (Navy) (Shared)

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 provides a new generation of communication satellites to replenish the existing constellation. The first UHF Follow-On satellite became operational in December 1993.

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OATSD (PA) DISR 28-4-820
DEPARTMENT OF DEFENSE

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UHF FOLLOW-ON, December 31, 1994

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 (UFO) satellite system is potentially operationally effective and suitable.

The DAB program review held on 25 May 1990 reaffirmed the decision to proceed with the UHF Follow-On production and approved adding a limited Extremely High Frequency (EHF) capability pursuant to requirements promulgated by the Joint Chiefs of Staff (JCS), beginning with the fourth launched satellite. The acquisition baseline incorporating the EHF capability was signed by the Defense Acquisition Executive on 9 October 1990.

The first UHF Follow-on (UFO) satellite, F1, was launched on 25 March 1993 and subsequently declared a total loss as a result of underperformance of the launch vehicle. The Government received \$199M in contract remedies for the loss.

Acquisition Program Baseline Change 1, dated 16 June 1993, revised the milestone objectives for Production Acceptance Test and Evaluation Initial (PAT&E-I), Operational Testing Phase III (OT-III), and Initial Operational Capability (IOC).

The second UFO satellite, F2, was launched on 3 September 1993, and became operational over the Indian Ocean on 2 December 1993 to achieve program IOC.

In the FY-94 Defense Appropriations Act, Congress approved the use of the \$199M contract remedies from the F1 loss to procure and launch an EHF capable replacement satellite.

b. Significant Developments Since Last Report --

On 26 January 1994, a contract modification was awarded at the not-to-exceed price of \$197M for an Extremely High Frequency (EHF) capable tenth satellite to replace satellite F1.

The third Ultra High Frequency Follow-On (UFO) satellite, F3,

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UHF FOLLOW-ON, December 31, 1994

7b. Program Highlights (Cont'd):

successfully launched on 24 June 1994, is operational over the Atlantic Ocean.

In July 1994, following a very successful OT-III, Commander, Operational Test and Evaluation Force (COMOPTEVFOR) reported satellite F2 to be operationally effective and suitable.

c. Changes Since As Of Date --

The fourth UFO satellite, F4, which is the first to include the EHF Space Package, was successfully launched aboard an Atlas II launch vehicle on 28 January 1995, and became operational on 16 March 1995.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline of 16 June 1993. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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 Ground 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	OCT 93	OCT 93
OT-III	OCT 92	APR 94	APR 94
IOC	DEC 92	DEC 93	DEC 93
OT-IV (Satellite No. 4 w/EHF)	FEB 95	FEB 95	AUG 95 (Ch-1)
IOC (Satellite No. 4 w/EHF)	TBD	MAY 95	MAR 95 (Ch-2)

b. Previous Change Explanations --

The Production Estimate was adjusted to reflect the program as stated in the Acquisition Program Baseline dated 9 October 1990. Due to the failure of satellite F1, PAT&E-I (Start in-orbit testing), OT-III, and IOC milestones could not be achieved in 1992. As a result, under the Approved Program, those milestone objectives and the IOC (Satellite No. 4 w/EHF) objective were changed according to Acquisition Program Baseline Change 1 dated 16 June 1993.

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UHF FOLLOW-ON, December 31, 1994

9c. Schedule (Cont'd):

c. Current Change Explanations --

(Ch-1) for OT-IV has been changed from February 1995 to August 1995 for two reasons: (1) The launch of satellite F4, the satellite required for OT-IV testing, was delayed from First Quarter FY-95 until Second Quarter FY-95. (2) Although satellite F4 became operational in March 1995, operational testing is being delayed until terminals are available for testing.

(Ch-2) for IOC (Satellite No. 4 w/EHF was achieved in March 1995.

d. References --

Production Estimate:

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:

NAE Approved Acquisition Program Baseline dated June 16, 1993.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Launch capability	Dual Launch Compatible	Dual launch compatible	/ Expendable launch vehicle	Expendable launch vehicle	Expendable launch vehicle
Nuclear Hardening	Comply with SM-416-84 levels	Comply with SM-416-84 levels	/ Comply with SM-416-84 levels	Comply with SM-416-84 levels	Comply with SM-416-84 levels
Anti-jam uplink channel capacity for fleet broadcast (per satellite)	3	3	/ 1	3	3
Effective Isotropic Radiated Power (EIRP) and capacity for UHF channels:					
25 KHz channels w/28 dBW (channels)	3	3	/ 2	3	3
25 KHz channels w/26 dBW (channels)	15	15	/ 14	15	15

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UHF FOLLOW-ON, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
5 KHz channels w/20 dBW (channels)	21	21	/ 20	21	21
UHF Interoperability	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	/ Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- ible with all existing UHF termi- nals except fre- quency hoppers
EHF Requirements (for satellites 4-9)					
EHF Crossbanding	EHF uplink may be down- linked on SHF, (20 GHZ) UHF, or both	EHF uplink may be down- linked on SHF (20 GHz), UHF, or both	/ EHF uplink may be down- linked on SHF (20 GHz), UHF or both	TBD	EHF uplink may be down- linked on SHF (20 GHZ) UHF, or both
EHF interoperability	Compa- tible with Milstar termi- nals and MIL-STD- 1582	Compat- ible with Milstar termi- nals and MIL-STD- 1582	/ Compat- ible with Milstar termi- nals and MIL-STD- 1582	TBD	Compat- ible with Milstar termi- nals and MIL-STD- 1582
EHF EIRP for Earth coverage antenna (dBW)	27	27	/ 27	TBD	27
EHF EIRP for 5 degree steerable spot beam antenna (dBW within 2.5 degree of boresight)	37	37	/ 37	TBD	37
EHF Capability					

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UHF FOLLOW-ON, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Communication Channels	7	7 / 7	TBD	7
Telemetry & Command Channel	1	1 / 1	TBD	1
Broadcast uplink Channels	3	3 / 3	TBD	3
System Availability (%)	95	95 / 90	99	95
Mean mission duration				
Years	10	10 / 10	TBD	10
Years Design Life	14	14 / 14	TBD	14
Fuel Quantity				
Years station keeping	14	14 / 14	14.5	14
15 degree/day move	1	1 / 1	1	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	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 /DIA valdtd NTIC threat level (classified)	DIA validate NTIC threat level (classified)
Autonomy (Up to one month): Probability of reacquisition (%)	95	95 / 90	TBD	95
Frequency Plan	As required by MJCS 68-88	As required by MJCS 68-88	As required by MJCS 68-88	As required by MJCS 68-88

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10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations --

"Launch capability" and "EHF capability" were added as baseline characteristics.

c. Current Change Explanations --

Note: UHF Interoperability and System Availability were demonstrated during OT-III.

d. References --

Production Estimate:

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:

NAE Approved Acquisition Program Baseline dated June 16, 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	1479.1	1526.4	1439.3
Flyaway	(1479.1)		(1439.3)
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	1479.1	1526.4	1439.3
Escalation	237.0	318.9	279.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(237.0)	(318.9)	(279.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1716.1	1845.3	1718.7
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10</u>	<u>10</u>	<u>9</u>
Total	10	10	9

Procurement of the tenth satellite is funded with the contract remedies resulting from the loss of the first satellite. The number

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11b. Total Program Cost and Quantity (Cont'd):

of deliveries has therefore increased from nine to ten.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:

NAE Approved Acquisition Program Baseline dated June 16, 1993.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY88\$)	1439.3	1526.4	
(2) Quantity	9	10	
(3) Unit Cost	159.92	152.64	4.77
b. Procurement			
(1) Cost (BY88\$)	1439.3	1526.4	
(2) Quantity	9	10	
(3) Unit Cost	159.92	152.64	4.77

Procurement of the tenth satellite (F10) is funded with contract remedies resulting from the loss of the first satellite (F1). The tenth satellite will be delivered in FY 98.

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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	-	+39.3	-	+39.3
Quantity	-	-113.2	-	-113.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+78.3	-	+78.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+4.4	-	+4.4
Current Changes:				
Economic	-	-8.5	-	-8.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	6.7	-	+6.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-1.8	-	-1.8
Total Changes	-	+2.6	-	+2.6
Current Estimate	-	1718.7	-	1718.7

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UHF FOLLOW-ON, December 31, 1994

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	-	-90.7	-	-90.7
Schedule	-	+2.5	-	+2.5
Engineering	-	-	-	-
Estimating	-	+42.7	-	+42.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-45.5	-	-45.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	5.7	-	+5.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+5.7	-	+5.7
Total Changes	-	-39.8	-	-39.8
Current Estimate	-	1439.3	-	1439.3

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 #7,8,9.
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; reduced engineering services on production contract for FY94-97.

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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	-8.5
Adjustment for Current & Prior Inflation. (Estimating)	+7.0	+8.2
Congressional reductions (Non-FFRDC, Procurement Reform). (Estimating)	-1.3	-1.5
Procurement Subtotal	+5.7	-1.8

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC	Changes								PAUC
(Initial Est)	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	(Current Est)
171.610	3.422	6.491	--	--	9.444	--	--	19.357	190.967

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

<u>UHF FOLLOW-ON:</u>	<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u> <u>Qty</u>
Hughes Aircraft Company, El Segundo, CA	\$1374.7	N/A 10
N00039-88-C-0300, FFP		
Award: July 29, 1988		
Definitized: July 29, 1988		

<u>Current Contract Price</u>	<u>Estimated Price At Completion</u>
<u>Target</u> <u>Ceiling</u> <u>Qty</u>	<u>Contractor</u> <u>Program Manager</u>
\$1605.3 N/A 10	\$1605.3 \$1605.3

Explanation of Change:

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. Procurement of the tenth satellite is funded with the contract

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15. Contract Information (Cont'd):

remedies resulting from the loss of the first satellite. The number of deliveries has therefore increased from nine to ten.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 81.8% (9 yrs/11 yrs)

(2) Percent Program Cost Appropriated: 96.7% (\$1661.2 / \$1718.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	1661.2	51.8	5.7	-	1718.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1661.2	51.8	5.7	-	1718.7

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	
1987				22.6	23.3	23.3	23.3	2.7
1988	1	88.3	187.4	115.6	123.9	123.9	123.4	3.0
1989				142.6	158.8	158.8	158.2	4.2
1990	2		245.3	277.2	319.5	319.5	319.5	4.0

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	123.4	3.0
1989				142.6	158.8	158.8	158.2	4.2
1990	2		245.3	277.2	319.5	319.5	319.5	4.0

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16c. Program Funding Summary (Cont'd):

		Flyaway			Total Then-Year \$			
Fiscal		FY88 Dollars		Total				Escl
Year	Qty			Base		Obli-	Ex-	Rate
		Nonrec	Rec	Year\$	Program	gated	pended	(%)

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1991	3	90.1	437.2	207.1	244.9	244.9	239.4	4.3
1992	3		391.0	207.2	251.7	251.7	246.8	2.8
1993				199.1	247.4	247.3	179.4	2.7
1994				130.8	167.1	166.9	49.6	2.0
1995				94.8	124.6	123.6	2.3	2.7
1996				38.2	51.8			3.0
1997				4.1	5.7			3.0
1998								3.0
1999								3.0
Subtot	9	178.4	1260.9	1439.3	1718.7	1659.9	1341.9	
Grand Total	9	178.4	1260.9	1439.3	1718.7	1659.9	1341.9	

Procurement of the tenth satellite (F10) was funded with contract remedies resulting from the loss of the first satellite (F1).

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 --

No quantities are funded for the budget year and out.

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17c. Production Rate Data (Cont'd):

c. Deliveries (Plan/Actual) --		<u>To Date</u>
	RDT&E	0/0
	Procurement	3/3
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.

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

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18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&MN	4.2	0.8	0.8	1.0	6.8
Total	4.2	0.8	0.8	1.0	6.8

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: JTUAV

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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- (U) Designation and Nomenclature (Preferred Name):
Joint Tactical Unmanned Aerial Vehicles (JTUAV)
- (U) DoD Component: Navy

Joint Participants:
Army, Navy, Marine Corps
- (U) Responsible Office and Telephone Number:
JT-UAV Project Office
Attn: SPAE-UAV
Redstone Arsenal, AL 35898-7459
COL Paul K. Tanguay
Assigned: February 22, 1992
AV 788-4449 COMM 205-895-4449
- (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0305141D
PROCUREMENT:
APFN 0300 ICN 0000000 (DCA/DNA)

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AS AMENDED
MAR 30 1995 2

DIRECTORATE FOR FREEDOM OF INFORMATION
 AND SECURITY REVIEW (OASD-PA)
 DEPARTMENT OF DEFENSE

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5. (U) Related Programs: None.

6. (U) Mission and Description:

The total Unmanned Aerial Vehicles-Joint Program encompasses two significant programs; Maneuver and Hunter/Shipboard. 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.

The Maneuver, formerly Close Range 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 Hunter/Shipboard, formerly Short Range 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. Hunter/Shipboard 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.

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 April 7, 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. 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 meet the Services' needs. 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:

Maneuver: A risk reduction technology demonstration program for the Maneuver system was implemented during FY 1991 and completed FY 1992. Six companies participated in a technology demonstration of a 200

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7a. (U) Program Highlights (Cont'd):

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 Maneuver program. Demonstrations showed that current technology supports the concurrent use of a 50 pound FLIR and a 200 pound air vehicle.

Hunter/Shipboard: 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 Hunter/Shipboard prime contractor on June 30, 1992. On December 28, 1992 the contract with IAI was novated, making TRW the prime contractor and IAI the principal sub-contractor. The DAB recommended approval and the Acquisition Decision Memorandum (ADM) of January 19, 1993 approved Low Rate Initial Production of seven systems, and approved initiating effort on the Block II improvement program.

b. (U) Significant Developments Since Last Report --
Completion of Acceptance Test Procedures (ATP) for the first system was expected in October 1994. Problems experienced during the ATP and the suspension of flight due to an air vehicle crash have delayed acceptance of the first Hunter system.

The Maneuver Cost Operational Effective Analysis was approved by the Oversight Board and forwarded to the Joint Requirements Oversight Council for final approval. The Cost Operational Effective Analysis is supportive of the service approved Operational Requirements Document.

ASN(R&DA) has chartered an Independent Review Team to assess the Hunter UAV program. Results of this assessment are due by April 7, 1995.

The program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --
Since November 1994, Hunter has made over 20 flights in Israel. Flights were conducted to validate software mods. As of March 3rd over six flights were conducted in the U. S., again confirming software and hardware fixes.

The ATP began again in the March 1995 and system one acceptance is scheduled for April 1995. The delay in acceptance testing has resulted in a similar delay to Milestone III, now scheduled for November 1996.

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7c. (U) Program Highlights (Cont'd):

There have been two air vehicle mishaps since the as of date. On March 7, 1995 AV 112 sustained minor damage when the contractor was attempting to perform a post maintenance check flight. Preliminary estimate is less than \$5,000.00 in damage.

On March 8, 1995, AV 111 crashed and suffered a total loss when the contractor was conducting a post-maintenance check flight. The AV crashed and was totally destroyed. Causes of the mishap are being addressed by the government and the contractor. Preliminary indications are that both mishaps were due to operator error.

8. (U) Threshold Breaches:

The JTUAV Hunter/Shipboard program currently has two cost threshold breaches and seven Schedule breaches to the DAE Acquisition Program Baseline (APB) dated January 19, 1993, all resulting from program restructures. A Program Deviation Report (PDR) has been submitted. An APB has not yet been approved for the Maneuver Program. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:
Maneuver

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0	JAN 90	N/A	JAN 90
Milestone I/II	SEP 92	N/A	JUN 95(Ch-1)
IOT&E			
Start	FEB 96	N/A	JAN 98(Ch-1)
Complete	FEB 97	N/A	FEB 98(Ch-1)
Milestone III	FEB 97	N/A	JUN 98(Ch-1)
Full Rate Production Contract Award	FEB 97	N/A	JUL 98(Ch-1)
First Unit Equip (FUE)	JUN 97	N/A	AUG 98(Ch-1)
Initial Operating Capability (IOC)	FEB 98	N/A	SEP 98(Ch-1)

b. (U) Previous Change Explanations --

Milestone I/II was delayed due to the Operational Requirements Document (ORD) not being approved. Milestone I/II was delayed from Jan 94 to Nov 94 due to ORD and COEA delays. IOT&E start delayed from Oct 96 to Jan 97 due to Congressional funding reductions caused by program delays. IOC moved forward from Feb 98 to Sep 97 to meet services requirements.

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9c. (U) Schedule (Cont'd):
Maneuver

c. (U) Current Change Explanations —

(Ch-1) Delay in approval of the Operational Requirements Document (ORD) resulted in the following changes:

Milestone I/II from Nov 94 to Jun 95
IOT&E Start from Jan 97 to Jan 98, and Complete from Feb 97 to Feb 98
Milestone III from Jul 97 to Jun 98
Full Rate Production Contract Award from Jul 97 to Jul 98
First Unit Equipment (FUE) from Aug 97 to Aug 98
Initial Operating Capability (IOC) from Sep 97 to Sep 98.

d. (U) References —

(U) Development Estimate:

DOD UAV Master Plan approved March 1993; JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-009-91, Service Review of UAV System Rqmts, April 4, 1991; JROCM-008-91, June 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992.

(U) Approved Program: None.

JTUAV Hunter/Shipboard

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
Service Final DT&E (TET)			
Start	N/A	DEC 90	DEC 90
Complete	N/A	APR 92	APR 92
Early Operational Assessment (IUT I)			
Start	N/A	JUN 92	JUN 92
Complete	N/A	JUL 92	JUL 92
Low-Rate Production Review (LRPR)	N/A	JAN 93	JAN 93
Low-Rate Production Award	SEP 92	JAN 93	FEB 93
Low-Rate Production First Delivery	DEC 93	MAY 94	APR 95(Ch-1)
IOT&E			

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9a. (U) Schedule (Cont'd):
JTUAV Hunter/Shipboard

(U) Milestones (Cont'd) —

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Start	APR 94	NOV 94	JUN 96 (Ch-1)
Complete	AUG 94	MAR 95	JUL 96 (Ch-1)
Milestone IIIB	SEP 92	N/A	N/A
Milestone IIIC	SEP 94	N/A	N/A
Milestone III	N/A	JUN 95	NOV 96 (Ch-1)
Full Rate Production Contract Award	SEP 94	JUN 95	DEC 96 (Ch-1)
First Unit Equipped (FUE)	OCT 94	JUL 95	DEC 96 (Ch-1)
Organic Support	N/A	JUL 95	DEC 96 (Ch-1)
Initial Operating Capability (IOC)	JUN 95	FEB 96	DEC 96 (Ch-1)

b. (U) Previous Change Explanations —

NDI contract award date, Service final DT&E (TET) start, Early Operational Assessment (IUT I) start and complete, Low-Rate Production Review (LRPR), Milestone III, and Organic Support were added to the approved Acquisition Program Baseline, dated 19 January 1993.

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 which includes Service Final DT&E complete, Low-Rate Production Award, Low-Rate Production first delivery, IOT&E start and complete, Full Rate Production Contract Award, First Unit Equipped (FUE), and Initial Operating Capability (IOC).

Milestones IIIB and IIIC were replaced by one full rate production decision, Milestone III.

IOT&E start delayed from Nov 94 to Jul 95; complete delayed from Mar 95 to to Aug 95. These efforts reflect the values introduced by the proposed baseline for the Joint Tactical UAV Hunter program from the Short Range UAV, which introduced the concept of Maturation and Operational Risk Reduction (MORR), and field UAV services. This delay in schedule affected all of the schedule dates from that date forward, which includes Milestone III, Full Rate Production Contract Award, First Unit Equipment (FUE), Organic Support, and Initial Operating Capability (IOC).

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9c. (U) Schedule (Cont'd):
JTUAV Hunter/Shipboard

c. (U) Current Change Explanations —

(Ch-1) IOT&E and subsequent milestones reflect the values introduced by the proposed baseline for the Joint Tactical UAV Hunter Program which introduced the concept of Maturation and Operational Risk Reduction (MORR). This delay in schedule affected all of the schedule dates listed below:

Low Rate Production first delivery from May 94 to Apr 95.
IOT&E Start from Jul 95 to Jun 96, and Complete from Aug 95 to Jul 96
Milestone III from Dec 95 to Nov 96
Full Rate Production Contract Award from Dec 95 to Dec 96
First Unit Equipped (FUE) from Dec 95 to Dec 96
Organic Support from Dec 95 to Dec 96
Initial Operating Capability (IOC) from Dec 95 to Dec 96.

d. (U) References —

(U) Development Estimate:

DOD UAV Master Plan approved March 1993; JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-008-91, June 1991; UAV JOP Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 19, 1993.

10. (U) Performance Characteristics:
Maneuver

a. (U) Performance —	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Radius of Action (km)	50	N/A	/ N/A	TBD	50
Mission Duration (hrs)	4	N/A	/ N/A	TBD	3
Altitude	15000	N/A	/ N/A	TBD	10000
Gross Take-off Weight (lbs)	100	N/A	/ N/A	TBD	2 per transport table

b. (U) Previous Change Explanations —

Mission duration (hrs), Altitude and Gross Take-off weight (lbs) parameters are latest testing data from the Operational Requirement Document.

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10c. (U) Performance Characteristics (Cont'd):
Maneuver

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Development Estimate:

DOD UAV Master Plan approved March 1, 1991; JROOM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROOM-009-91, Service Review of UAV System Rmts, April 4, 1991; JROOM-008-91, June 1991; UAV JFO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992.

(U) Approved Program: None.

JTUAV Hunter/Shipboard

a. (U) Performance —

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mission Duration (hrs)	12	12	/ 8	12	8
Climb Rate (ft/min) @ MSL standard day	1000	1000	/ 500	1000	500
Altitude (ft/MSL standard day)	N/A	30000	/ 15000	3000	15,000
Operating Range (km)	N/A	300	/ 200	300	200

(b)(1)

Readiness/Support

MTBMCF (hrs)	20	30	/ 20	30	20
MTBOMF (hrs)	13	28	/ 13	28	13
O-level MTTR (hrs)	.5	N/A	/ N/A	N/A	N/A
Launch/Recovery Area (unimproved) (meters)	N/A	LHA, LHD, CV-CVN Capable	/ 200X75	LHA, LHD, CV-CVN Capable	200x75
Set-Up (hrs)	N/A	2	/ 3	2	3
Plan Mission and Launch after Emplacement (hrs)	N/A	.5	/ 2	.5	2
Tear Down (hrs)	N/A	1.5	/ 1.5	1.5	1.5
Imaging Payload Performance Recognize Light Tactical Vehicles at:					

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):
JTUAV Hunter/Shipboard

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Imaging Payload Performance Recognize Personnel in the Open at:				
(b)(1)				
Availability (Ao) (%)				
One Air Vehicle (6 hr flight)	N/A	85 / 85	85	85
Relay Flight (%) (8 hr flight)	N/A	85 / 65	85	65

b. (U) Previous Change Explanations --

Mission Duration (hrs), and Climb rate (ft/min) @ MSL standard day parameters were latest testing data from the ORD.

Altitude (ft/msl standard day), Operating range (km), Endurance at operating range (hrs), Set-up (hrs), Plan mission and launch after emplacement, Tear down (hrs), Vehicles at: slant range (m), Altitude (m), Personnel in the Open at: slant Range (m), altitude (m), Availability (Ao) (%) One air vehicle (6 hr flight), relay flight (%) (8 hr flight), and Operational range (km) characteristics were added to the approved Acquisition Program Baseline, dated 19 January 1993.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DOD UAV Master Plan approved March 1, 1991; JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-009-91, Service Review of UAV Systems Rmmts, April 4, 1991; JROCM-008-91, June 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 19, 1993.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
Maneuver

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost —			
Development (RDT&E)	76.7	0.0	59.9
Procurement	556.7	0.0	623.8
Flyaway	(377.2)		(440.8)
Other Weapon Systems	(149.1)		(152.9)
Peculiar Support	(3.0)		(3.4)
Initial Spares	(27.4)		(26.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 88 Base-Year \$	633.4	0.0	683.7
Escalation	384.4	0.0	387.4
Development (RDT&E)	(21.4)	(0.0)	(18.8)
Procurement	(363.0)	(0.0)	(368.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1017.8	0.0	1071.1
b. (U) Quantity —			
Development (RDT&E)	4	N/A	5
Procurement	172	N/A	100
Total	176	N/A	105

The Maneuver program will be baselined at the Milestone I/II Review this summer prior to contract award.

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 March 1, 1991; JROOM-009-91, Service Review of UAV Systems Rmpts, April 4, 1991; JROOM-008-91, UAV Program Restructure, April 4, 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM), signed January 3, 1992.

(U) Approved Program: None.

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11a. (U) Total Program Cost and Quantity (Cont'd):
JTUAV Hunter/Shipboard

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	138.2	131.3	193.3
Procurement	1093.4	1608.7	1885.9
Total Flyaway	(910.0)		(1537.0)
Other Weapon Systems	(118.7)		(194.8)
Peculiar Support	(29.2)		(60.9)
Initial Spares	(35.5)		(93.2)
Construction (MILCON)	0.0	15.7	14.8
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 88 Base-Year \$	1231.6	1755.7	2094.0
Escalation	429.8	814.3	995.8
Development (RDT&E)	(31.8)	(29.2)	(44.3)
Procurement	(398.0)	(780.9)	(946.4)
Construction (MILCON)	(0.0)	(4.2)	(5.1)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1661.4	2570.0	3089.8
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	50	50	52
Total	50	50	52

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 March 1, 1991; JROCM-009-91, Service Review of UAV System Rgmts, April 4, 1991; JROCM-008-91, UAV Program Restructure, April 4, 1991; UAV JFO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM), signed January 3, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 19, 1993.

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12. (U) Unit Cost Summary:

Maneuver

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 94 SAR)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (FY88\$)	683.7	0.0	
(2) Quantity	105	0	
(3) Unit Cost	6.511	N/A	N/A
b. (U) Procurement			
(1) Cost (FY88\$)	623.8	0.0	
(2) Quantity	100	0	
(3) Unit Cost	6.238	N/A	N/A

JTUAV Hunter/Shipboard

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (FY88\$)	2094.0	1755.7	
(2) Quantity	52	50	
(3) Unit Cost	40.269	35.114	14.681
b. (U) Procurement			
(1) Cost (FY88\$)	1885.9	1608.7	
(2) Quantity	52	50	
(3) Unit Cost	36.267	32.174	12.722

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13. (U) Cost Variance Analysis:
Maneuver

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	98.1	919.7	0.0	1017.8
Previous Changes:				
Economic	-0.9	-11.9	-	-12.8
Quantity	-	-498.7	-	-498.7
Schedule	-	+68.3	-	+68.3
Engineering	-	-	-	-
Estimating	+21.0	+185.3	-	+206.3
Other	-	-	-	-
Support	-	-92.3	-	-92.3
Subtotal	+20.1	-349.3	-	-329.2
Current Changes:				
Economic	0.4	-4.1	-	-3.7
Quantity	-	-	-	-
Schedule	-	2.5	-	+2.5
Engineering	-	-	-	-
Estimating	-39.9	239.6	-	+199.7
Other	-	-	-	-
Support	-	184.0	-	+184.0
Subtotal	-39.5	+422.0	-	+382.5
Total Changes	-19.4	+72.7	-	+53.3
Current Estimate	78.7	992.4	-	1071.1

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13a. (U) Cost Variance Analysis (Cont'd):
Maneuver

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	-	-282.6	-	-282.6
Schedule	-	+39.9	-	+39.9
Engineering	-	-	-	-
Estimating	+15.1	+122.3	-	+137.4
Other	-	-	-	-
Support	-	-60.6	-	-60.6
Subtotal	+15.1	-181.0	-	-165.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-31.9	184.0	-	+152.1
Other	-	-	-	-
Support	-	64.1	-	+64.1
Subtotal	-31.9	+248.1	-	+216.2
Total Changes	-16.8	+67.1	-	+50.3
Current Estimate	59.9	623.8	-	683.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.
Estimating: Increased estimate to reflect revised escalation indices.

Procurement

Economic: Revised economic escalation indices.
Estimating: Increased estimate to reflect revised escalation indices.
Support: Increased support estimate to reflect revised escalation indices.

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13c. (U) Cost Variance Analysis (Cont'd):
Maneuver

c. (U) Current Change Explanations —

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.8
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
Re-evaluated program development requirements (Estimating)	-32.1	-40.1
RDTE Subtotal	<u>-31.9</u>	<u>-39.5</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.1
Schedule Variance resulting from quantity allocation (Schedule)	N/A	+2.5
Re-estimate of system cost and production (Estimating)	+184.0	+239.6
Increase in data, training service and equipment, other procurement, Commercial equivalent equipment, and Initial Spares to support program rephasing to comply with the FYDP. (Support)	+64.1	+184.0
Procurement Subtotal	<u>+248.1</u>	<u>+422.0</u>

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13a. (U) Cost Variance Analysis (Cont'd):
JTUAV Hunter/Shipboard

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	170.0	1491.4	0.0	1661.4
Previous Changes:				
Economic	-1.8	+55.4	+0.1	+53.7
Quantity	-	+284.4	-	+284.4
Schedule	-	+52.7	-	+52.7
Engineering	+48.3	+30.6	-	+78.9
Estimating	+16.5	+682.2	+19.8	+718.5
Other	-	-	-	-
Support	-	+223.5	-	+223.5
Subtotal	+63.0	+1328.8	+19.9	+1411.7
Current Changes:				
Economic	-0.7	-18.9	-0.1	-19.7
Quantity	-	-	-	-
Schedule	-	40.7	-	+40.7
Engineering	-	-	-	-
Estimating	5.3	-39.8	0.1	-34.4
Other	-	-	-	-
Support	-	30.1	-	+30.1
Subtotal	+4.6	+12.1	-	+16.7
Total Changes	+67.6	+1340.9	+19.9	+1428.4
Current Estimate	237.6	2832.3	19.9	3089.8

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13a. (U) Cost Variance Analysis (Cont'd):
JTUAV Hunter/Shipboard

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	138.2	1093.4	0.0	1231.6
Previous Changes:				
Quantity	-	+149.6	-	+149.6
Schedule	-	+20.5	-	+20.5
Engineering	+37.9	+23.1	-	+61.0
Estimating	+13.1	+457.8	+15.8	+486.7
Other	-	-	-	-
Support	-	+149.3	-	+149.3
Subtotal	+51.0	+800.3	+15.8	+867.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.1	-24.0	-1.0	-20.9
Other	-	-	-	-
Support	-	16.2	-	+16.2
Subtotal	+4.1	-7.8	-1.0	-4.7
Total Changes	+55.1	+792.5	+14.8	+862.4
Current Estimate	193.3	1885.9	14.8	2094.0

b. (U) Previous Change Explanations --

RD&E

Economic: Revised economic escalation indices. Economic adjustment for negative program change. Adjustment for current and prior inflation.

Engineering: Common Automatic Recovery System (CARS).

Estimating: Adjustment for current & prior inflation. Refined development requirements. Increased costs for Ada Conversion and Heavy Fuel Engine.

Procurement

Economic: Revised economic escalation indices. Economic adjustment for negative program change.

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13b. (U) Cost Variance Analysis (Cont'd):

JTUAV Hunter/Shipboard

Quantity: Quantity increase of 2 systems. Inclusion of additional attrition air vehicles into FYDP program.

Schedule: Delay in procurement buy schedule. Stretch-out of Production.

Engineering: Addition of Shipboard variant.

Estimating: Adjustment for current & prior inflation. Increase in attrition spares (replacement air vehicles). Common Auto Recovery System. Realignment of funding to Services' requirements as approved by the UAV working group. Correction to align flyaway and support costs. Maturation and Operation Risk Reduction (MORR). Reestimate of system cost and production support.

Support: Adjustment for current & prior inflation. Increased estimate for peculiar support, initial spares, and other weapon systems costs. Correction to align flyaway and support costs. Support equipment associated with system quantity changes, and schedule rephasing associated system support equipment.

MILCON

Economic: Revised economic escalation indices.

Estimating: Additional hanger facilities. Inflation adjustment.

c. (U) Current Change Explanations —

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-0.7
Adjustment for Current & Prior Inflation. (Estimating)	+1.4	+1.7
Congressional transfer of T&E to Development (Estimating)	+10.7	+14.5
Revised estimates due to decrements by the Defense Airborne Reconnaissance Office (Estimating)	-8.0	-10.9
<u>RD&E Subtotal</u>	<u>+4.1</u>	<u>+4.6</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-18.8

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13c. (U) Cost Variance Analysis (Cont'd):
JTUAV Hunter/Shipboard

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.1
Rephasing of attrition air vehicle buys FY96-07 (Schedule)	N/A	+40.7
Adjustment for Current & Prior Inflation. (Estimating)	+2.5	+2.7
Transfer of T&E from Procurement to Development. (Estimating)	-11.6	-14.5
Realignment of funding for requirements as approved by the JTUAV working group (Estimating)	-14.9	-28.0
Adjustment for Current and Prior Inflation (Support)	+0.6	+0.8
Increased estimate for Other Procurement Weapon Systems costs. (Support)	+15.3	+28.7
Re-estimate of peculiar test equipment. (Support)	+0.3	+0.6
Procurement Subtotal	-7.8	+12.1
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current and prior inflation. (Estimating)	-1.0	+0.1
MILCON Subtotal	-1.0	=

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Maneuver

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Boon	Qty	Sch	Eng	Est	Other	Spt	Total	
5.783	-0.157	-0.839	0.674	—	3.867	—	0.873	4.418	10.201

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

JTUAV Hunter/Shipboard

(U) Current SAR Baseline to Current Estimate —

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
33.228	0.654	4.191	1.796	1.517	13.156	—	4.877	26.191	59.419

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement —

(U) Hunter/Shipboard:	Target	Initial Contract Price Ceiling	Qty
TRW, San Diego, CA			
N00019-89-C-0346, FFP	\$41.6	N/A	2
Award: September 15, 1989			
Definitized: September 15, 1989			

Current Contract Price		Estimated Price At Completion	
Target	Ceiling	Qty	Contractor Program Manager
\$402.6	N/A	9	\$402.6 \$402.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This TRW FFP contract has been modified to procure Heavy Fuel Engine Ground Control Station Logistics Support, Personnel Training, Common Auto Recovery Systems and Systems Integration Laboratory .

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status —

Total Program

- (1) Percent Program Completed: 40.0% (8 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 21.0% (\$875.4 / \$4160.9)

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Maneuver

- (1) Percent Program Completed: 8.3% (1 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 2.4% (\$26.1 / \$1071.1)

JTUAV Hunter/Shipboard

- (1) Percent Program Completed: 40.0% (8 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 27.5% (\$849.3 / \$3089.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Total Program</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY88-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	237.9	59.8	10.6	8.0	316.3
Procurement	627.6	60.2	269.1	2867.8	3824.7
MILCON	9.9	-	-	10.0	19.9
OGM	-	-	-	-	-
Total	875.4	120.0	279.7	2885.8	4160.9

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Maneuver</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2006)	<u>Total</u>
RDT&E	26.1	36.8	7.8	8.0	78.7
Procurement	-	-	51.4	941.0	992.4
MILCON	-	-	-	-	-
OGM	-	-	-	-	-
Total	26.1	36.8	59.2	949.0	1071.1

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16b. (U) Program Funding Summary (Cont'd):
JTUAV Hunter/Shipboard

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

JTUAV Hunter/Shipboard Appropriation	Prior Years (FY88-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2007)	Total
RD&E	211.8	23.0	2.8	-	237.6
Procurement	627.6	60.2	217.7	1926.8	2832.3
MILCON	9.9	-	-	10.0	19.9
O&M	-	-	-	-	-
Total	849.3	83.2	220.5	1936.8	3089.8

c. (U) Annual Summary -- Maneuver

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 0400 RD&E, Defense Agencies

1995				20.4	26.1			2.7
1996				28.0	36.8			3.0
1997				5.8	7.8			3.0
1998				5.7	8.0			3.0
Subtot	5			59.9	78.7			

FY93 and FY94 funding was moved from Maneuver to Hunter.

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16c. (U) Program Funding Summary (Cont'd):
Maneuver

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies

1997	4	2.3	23.8	36.8	51.4			3.0
1998	8	3.7	34.2	54.8	78.7			3.0
1999	11	2.6	47.2	78.7	116.5			3.0
2000	16	2.6	57.1	89.9	137.0			3.0
2001	16	2.6	66.4	89.8	141.0			3.0
2002	16	2.6	45.3	72.7	117.6			3.0
2003	16	2.6	38.1	52.8	87.9			3.0
2004	13	2.6	38.1	52.8	90.6			3.0
2005			28.6	39.6	70.0			3.0
2006			40.4	55.9	101.7			3.0
Subtot	100	21.6	419.2	623.8	992.4			
Grand Total	105	21.6	419.2	683.7	1071.1			

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16c. (U) Program Funding Summary (Cont'd):
JTUAV Hunter/Shipboard

c. (U) Annual Summary — JTUAV Hunter/Shipboard

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	11.8	11.8	4.2
1990				8.9	9.9	9.9	8.8	4.0
1991				16.1	18.5	18.5	18.5	4.3
1992				12.9	15.3	15.3	15.3	2.8
1993				22.9	27.8	27.8	11.5	2.7
1994				42.1	52.3	52.2	2.2	2.0
1995				59.7	76.2	27.3		2.7
1996				17.5	23.0			3.0
1997				2.1	2.8			3.0
Subtot				193.3	237.6	162.8	68.1	

Appropriation: 0300 Procurement, Defense Agencies

1988				23.3	25.0	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	16.1	18.6	18.6	18.6	4.0
1991	1	7.6	3.5	21.8	25.8	25.8	25.8	4.3
1992	4	18.5	68.7	102.7	124.7	124.7	120.5	2.8

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JTUAV, December 31, 1994

16a. (U) Program Funding Summary (Cont'd):
JTUAV Hunter/Shipboard

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1993	3	33.7	46.8	103.7	128.9	128.9	65.3	2.7
1994		37.0		50.9	65.0	53.6	5.7	2.0
1995	4	17.9	101.0	155.4	204.4	56.2		2.7
1996		32.5		44.5	60.2			3.0
1997	6	20.5	121.5	156.1	217.7			3.0
1998	6	17.0	105.1	134.8	193.7			3.0
1999	5	18.0	94.1	119.7	177.2			3.0
2000	5	16.6	86.2	111.5	169.9			3.0
2001	5	2.4	88.0	113.1	177.6			3.0
2002	5	2.4	115.0	150.8	243.8			3.0
2003	5	2.4	118.3	151.8	252.9			3.0
2004		2.4	90.5	116.2	199.3			3.0
2005		2.6	77.1	99.6	176.0			3.0
2006		2.6	75.9	98.2	178.7			3.0
2007		2.6	61.9	84.1	157.7			3.0
Subtot	52	249.1	1287.9	1885.9	2832.3	468.0	296.1	

Note: Recurring Flyaway includes attrition hardware in FY04 through FY07.

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JTUAV, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
JTUAV Hunter/Shipboard

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0500 Military Construction, Defense Agencies

1992				8.2	9.9	9.9	9.9	2.8
1993								2.7
1994								2.0
1995								2.7
1996								3.0
1997								3.0
1998								3.0
1999								3.0
2000				6.6	10.0			3.0
Subtot				14.8	19.9	9.9	9.9	
Grand Total	52	249.1	1287.9	2094.0	3089.8	640.7	374.1	

17. (U) Production Rate Data:

Maneuver

- a. (U) Deliveries (Plan/Actual) — None.
- b. (U) Approved Design-to-Cost Objective — N/A.

JTUAV Hunter/Shipboard

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JTUAV, December 31, 1994

17a. (U) Production Rate Data (Cont'd):
JTUAV Hunter/Shipboard

- a. (U) Deliveries (Plan/Actual) — To Date
0/0
4/4
- RDT&E
Procurement
- b. (U) Approved Design-to-Cost Objective — N/A.

18. (U) Operating and Support Costs:
Maneuver

- a. (U) Assumptions and Ground Rules —
Not required for pre-Milestone II programs.
- b. (U) Costs — None.
- c. (U) Contractor Support Costs — None.

JTUAV Hunter/Shipboard

- a. (U) Assumptions and Ground Rules —

Operating and Support costs are comprised mainly of Replenishment spares and repair parts. Other items are Transportation costs, and Operations and Training costs.

There is no antecedent system.

O&S cost updated in February 1995.

- b. (U) Costs — (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Hunter/ Shipboard Joint Tactical UAV System	No antecedent System System
Spares and Repair Parts	4.5	N/A
Replenishment Spares	3.8	N/A
Other O&S Costs	0.5	N/A
Total	8.8	N/A

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JTUAV, December 31, 1994

18c. (U) Operating and Support Costs (Cont'd):
JTUAV Hunter/Shipboard

c. (U) Contractor Support Costs — None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: AAV

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

Advanced Amphibious Assault Vehicle (AAAV)

2. DoD Component: USMC3. Responsible Office and Telephone Number:

DRPM AAA

COL JAMES FEIGLEY

DEPT. OF THE NAVY

Assigned: July 6, 1993

UNITED STATES MARINE CORPS

AV 226-1104 COMM (703) 696-1104

WASHINGTON, DC 20380-0001

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 Vehicle (AAAV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The AAAV Program is currently in the Concept Exploration/Definition Phase. The AAAV will provide the Marine Corps with the capabilities to execute the full range of its littoral warfare missions as well as the requisite survivability, offensive firepower, and mobility to support future combat operations ashore. Two Contractors are being evaluated from

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AAAV, December 31, 1994

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 was 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 Program Decision Memorandum (PDM) and Acquisition Decision Memorandum (ADM) 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 Amphibious Assault 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 a Milestone I program review.

All total program cost figures contained in this report reflect ONLY a summation up to and including the President's Budget. Outyear estimates in all categories will be provided after the Milestone I decision is made and the establishment of an Acquisition Program Baseline (APB). Both Advanced Amphibious Assault Vehicle (AAAV) contractors, United Defense Limited Partnership (UDLP) (formerly FMC Corporation) and General Dynamics Land Systems (GDLS), successfully fabricated Hydrodynamic Test Rigs (HTRs). The HTRs were approximately 0.8 Froude scale models of their respective AAAV designs. Both HTRs attained water speeds in excess of 30 knots and on 19 May 1993 GDLS' HTR operated for 1.4 hours on plane while covering 34 nautical miles at an average speed of approximately 25 knots. UDLP and GDLS submitted armor samples that have demonstrated and met the AAAV armor protection requirement. In September 1993, both contractors were awarded contracts to design, fabricate, and test a full scale Automotive Test Rig (ATR).

b. Significant Developments Since Last Report --

The contractors have continued testing their hydrodynamic test rigs at speeds exceeding 25 knots and maturing their AAAV designs. Both contractors have completed testing AAAV hull and armor samples that meet the AAAV requirement and have fabricated Full Scale AAAV test rigs that will begin government land mobility testing at Aberdeen Proving Grounds in March 1995. Each prime contractor has begun fabrication of operational AAAV turrets/weapons stations for testing

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AAAV, December 31, 1994

7b. Program Highlights (Cont'd):

in 1995 and 1996. The AAAV program office has initiated significant modeling and simulation efforts with the University of Iowa, University of Central Florida, Lawrence Livermore, and the Marine Corps Modeling and Simulation Office.

The program reached a Defense Acquisition Board (DAB) review in March 1995.

The AAAV designs are very mature and meet operational requirements. This system will satisfy mission requirements.

c. Changes Since As Of Date --
Demonstration/Validation (Milestone I) was approved 15 March 1995.

8. Threshold Breaches:

In accordance with, Section 2433, Title 10, USC, Nunn-McCurdy unit cost reporting is not required for pre-milestone II programs that are reporting RDT&E, N SARs. This program does not have an Acquisition Program Baseline (APB). APB will be approved in conjunction with the Milestone I decision.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0	AUG 88	N/A	AUG 88
JROC Validation	NOV 91	N/A	FEB 95 (Ch-1)
Marine Corps Program Decision Memorandum (MCPDM)	OCT 93	N/A	MAR 95 (Ch-1)
Milestone I	MAR 94	N/A	MAR 95 (Ch-1)
Dem/Val RFP Release	APR 94	N/A	APR 95 (Ch-1)
Dem/Val Contract Award	JAN 95	N/A	MAR 96 (Ch-1)
Milestone II	TBD	N/A	FEB 02
Milestone III	TBD	N/A	TBD
IOC	TBD	N/A	TBD

b. Previous Change Explanations --

Dates have changed because of delay of a Milestone I decision from March 1994 to March 1995.

c. Current Change Explanations --

Ch-1 Dates have changed because of delay of Milestone I from March 1994 to March 1995.

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AAAV, December 31, 1994

9d. Schedule (Cont'd):

d. References --

Planning Estimate:

This Planning Estimate reflects FY 94 President's Budget, dated 8 April 1993. A formal SAR rebaseline to reflect Milestone I decision is anticipated in June 1995.

Approved Program: None.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate	
Land Speed (hard surface road) (MPH)	45	N/A	/ N/A	TBD	N/A	(Ch-1)
Water Speed (Knots)	20-25	N/A	/ N/A	TBD	20-25	
High						
Surf Capability (Ft)	8	N/A	/ N/A	TBD	8	
Payload/Cargo	17-18	N/A	/ N/A	TBD	17-18	
Personnel (Combat equipped 285 lbs. ea)						
Cargo (lbs)	5130	N/A	/ N/A	TBD	5130	
Operating Range Water (Miles/Speed) (Kts)	75/20	N/A	/ N/A	TBD	75/20	
Land (Miles/Speed) (MPH)	300/25	N/A	/ N/A	TBD	300/25	
Forward Speed on a Hard Surface Road (Kilometers/Hour)	N/A	N/A	/ N/A	TBD	69-72	(Ch-2)
Armor Protection (Millimeters/Meters)	N/A	N/A	/ N/A	TBD	14.5/300	(Ch-2)
Main Armament Range (Meters)	N/A	N/A	/ N/A	TBD	1500-2000	(Ch-2)
Reliability (Hours)	N/A	N/A	/ N/A	TBD	70-95	(Ch-3)

b. Previous Change Explanations -- None

c. Current Change Explanations --

Ch-1 The Land Speed (hard surface road) (MPH) was replaced by the Forward Speed on a Hard Surface Road (Kilometers/Hour).

Ch-2 These characteristics have been added in accordance with JROC validated key performance parameters dated 27 Feb 95.

Ch-3 After JROC meeting of 16 Feb 95, Joint Staff made decision to change from RAM to Reliability [Mean Time Between Critical Mission Failure (MTBCMF)].

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AAAV, December 31, 1994

10d. Performance Characteristics (Cont'd):

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):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	131.4	0.0	416.9
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	131.4	0.0	416.9
Escalation	5.1	0.0	73.0
Development (RDT&E)	(5.1)	(0.0)	(73.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	136.5	0.0	489.9

Note: Reflects totals in FY96 President's budget for FY90 - 01.

b. Quantity --

Development (RDT&E)	0	N/A	0
Procurement	<u>0</u>	<u>N/A</u>	<u>0</u>
Total	0	N/A	0

Fully configured prototypes and their quantities cannot be finalized until the Milestone I decision has been made.

c. Foreign Military Sales/International Cooperative Programs --
None.

d. Nuclear Costs -- None.

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AAAV, December 31, 1994

11e. Total Program Cost and Quantity (Cont'd):

e. References --

Planning Estimate:

FY 1994 President's Budget dated 8 April 1993.

Approved Program: None.

12. Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with
Section 2433, Title 10, USC.

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AAAV, December 31, 1994

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	+1.1	-	-	+1.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+40.4	-	-	+40.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+41.5	-	-	+41.5
Current Changes:				
Economic	-0.5	-	-	-0.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	312.4	-	-	+312.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+311.9	-	-	+311.9
Total Changes	+353.4	-	-	+353.4
Current Estimate	489.9	-	-	489.9

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AAAV, December 31, 1994

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	+33.1	-	-	+33.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+33.1	-	-	+33.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	252.4	-	-	+252.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+252.4	-	-	+252.4
Total Changes	+285.5	-	-	+285.5
Current Estimate	416.9	-	-	416.9

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic) N/A -0.5

Adjustment for Current & Prior +0.3 +0.3
 Inflation. (Estimating)

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AAAV, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Additional budget to complete concept development and begin demonstration and validation. (Estimating)	+238.7	+297.7
Reprogramming of additional funds for Automotive Test Rig (ATR) experiments. (Estimating)	+6.0	+6.3
Congressional increase for the ATR and engine development. (Estimating)	+7.4	+8.1
RDTE Subtotal	+252.4	+311.9

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information:

No active large contracts over \$40M.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 50.0% (6 yrs/12 yrs)

(2) Percent Program Cost Appropriated: 28.1% (\$137.9 / \$489.9)

Paragraph 16.a and b does not reflect the current program status.

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AAAV, December 31, 1994

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	137.9	32.4	31.4	288.2	489.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	137.9	32.4	31.4	288.2	489.9

Note: Reflects totals in FY 96-FY 01 President's budget for FY 90-01.

Since SAR reports are RDT&E,N for FY 90-01, subsection 16a and b do not reflect current program status.

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated 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				24.8	25.3	25.3	25.3	2.8
1993				38.2	39.9	39.9	37.0	2.7
1994				16.7	17.8	16.0	7.9	2.0
1995				29.8	32.7	4.1	3.3	2.7

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AAAV, December 31, 1994

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: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1996				28.6	32.4			3.0
1997				26.9	31.4			3.0
1998				42.8	51.4			3.0
1999				69.2	85.6			3.0
2000				72.6	92.5			3.0
2001				44.7	58.7			3.0
Subtot				416.9	489.9	107.5	95.7	
Grand Total				416.9	489.9	107.5	95.7	

Reflects program office obligations and expenditures as of 16 Mar 1995.

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(0&A)823)
PROGRAM: NEW ATTACK SUB

AS OF DATE: December 31, 1994

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- (U) Designation and Nomenclature (Preferred Name):
NSSN/NEW ATTACK SUBMARINE
- (U) DoD Component: Navy
- (U) Responsible Office and Telephone Number:
 NEW ATTACK SUBMARINE PROGRAM OFFICE CAPT DAVID BURGESS
 PEO SUBMARINES Assigned: November 17, 1993
 2531 JEFFERSON DAVIS HIGHWAY AV 332-3700 COMM (703) 602-3700
 ARLINGTON, VA 22242-5168
- (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0604558N, 0604558N, 0603561N, 0604567N, 0603564N, 0603570N

- (U) Related Programs:
 NSSN Command, Control, Communications and Intelligence Program
 NSSN Reactor Plant

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NEW ATTACK SUB, December 31, 1994

6. (U) Mission and Description:

The New Attack Submarine Program is bringing forward a critical national security asset designed to flexibly address the unique multi-mission requirements of the post-Cold War era. Capable of performing traditional submarine missions, dominating the littoral battlespace and adapting to future requirements, the New Attack Submarine will satisfy any assigned role well into the Twenty-First Century. Intended to replace the fleet of SSN 688 Class submarines ending service in large numbers early next century, the New Attack Submarine is characterized by state-of-the-art stealth, enhanced features for special operations forces, and cost effective Command, Control, Communication and Intelligence capability. With an array of armament including the MK48 (ADCAP) torpedo and cruise missile vertical launch capability, the New Attack Submarine maintains total undersea superiority at an affordable cost.

7. (U) Program Highlights:

(b)(1)



b. (U) Significant Developments Since Last Report --
Initial report

c. (U) Changes Since As Of Date -- None

8. (U) Threshold Breaches:

There are no breaches to the approved APB dated 15 December 1994. Nunn-McCurdy breach unit cost reporting is not applicable for pre-Milestone II programs.

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NEW ATTACK SUB, December 31, 1994

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0	AUG 92	AUG 92	AUG 92
Milestone I	AUG 94	AUG 94	AUG 94
Milestone II	JUN 95	JUN 95	JUN 95
New Attack Submarine Integrated Product and Process Development Contract Award	OCT 95	OCT 95	OCT 95
Program Review (LRIP)	SEP 97	SEP 97	SEP 97
Lead Ship Delivery	JUN 04	JUN 04	JUN 04
LFT&E Shock Tests	OCT 04	OCT 04	OCT 04
Initial Operational Test & Evaluation Start	JUL 04	JUL 04	JUL 04
Complete	OCT 04	OCT 04	OCT 04
IOC (Lead Ship)	OCT 05	OCT 05	OCT 05
Milestone III	OCT 07	OCT 07	OCT 07
Related Programs			
NSSN COMMAND AND CONTROL SYSTEM			
FY95 Open Architecture Demo Complete	OCT 95	OCT 95	OCT 95
C&CS Module Start Fabrication	JUN 99	JUN 99	JUN 99
GFE C&CS Delivered to Shipyard	DEC 00	DEC 00	DEC 00
LBTS Integration and Test Complete	APR 02	APR 02	APR 02
C&CS Module delivered to ship	MAY 02	MAY 02	MAY 02

(b)(1)

*Entries related to the MK-48 ADCAP Program are for informational purposes only.

b. (U) Previous Change Explanations -- None

c. (U) Current Change Explanations --

(Ch-1) There has been a change in acquisition strategy of the MK-48 ADCAP program.

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NEW ATTACK SUB, December 31, 1994

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated December 15, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 15, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --

(U) Performance Characteristic					
a. (U) Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Radiated Noise					
Broadband Noise					
5 and 10 knots (prior to installation of hull coating)	N/A	N/A	/ Figure A.1	TBD	Figure A.1
Greater than or equal to 15 knots	Figure A.1	Figure A.1	/ Figure A.1 (beam aspect	TBD	Figure A.1

(b)(1)

Exceptions:

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NEW ATTACK SUB, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

PF	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
----	--	---------------------------	---------------------

(b)(1)

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NEW ATTACK SUB, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

(b)(1)

Approved Program	Demon- strated	Current
Objective/Threshold	Benef	Estimate

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NEW ATTACK SUB, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

PE	Approved	Demon-	Current
	Program	strated	Estimate
Objective/Threshold Perf			
(b)(1)			

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) The program will perform trade analyses to determine and obtain the proper balance between cost and performance.

(Ch-2) Planning Estimate was based on the assumption of development of a half-length mine. This development has not yet been directed. If a half-length mine is developed, the NSSN will meet the Estimate.

d. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated December 15, 1994.

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NEW ATTACK SUB, December 31, 1994

10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 15, 1994.

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)	3285.4	3285.4	3249.5
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	0.0	0.0
Total FY 94 Base-Year \$	3285.4	3285.4	3249.5
Escalation	483.6	483.6	482.6
Development (RDT&E)	(483.6)	(483.6)	(482.6)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	3769.0	3769.0	3732.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement		N/A	
Total	0	0	0
c. (U) Foreign Military Sales/International Cooperative Programs --			
None			
d. (U) Nuclear Costs --			
N/A			
e. (U) References --			

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated December 15, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 15, 1994.

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12. (U) 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	3769.0	0.0	0.0	3769.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-1.4	-	-	-1.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-35.5	-	-	-35.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-36.9	-	-	-36.9
Total Changes	-36.9	-	-	-36.9
Current Estimate	3732.1	-	-	3732.1

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	3285.4	0.0	0.0	3285.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-35.9	-	-	-35.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-35.9	-	-	-35.9
Total Changes	-35.9	-	-	-35.9
Current Estimate	3249.5	-	-	3249.5

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised Escalation Indices (Economic)	N/A	-1.4
Refined Cost Estimates (Estimating)	-35.9	-35.5
RD&E Subtotal	-35.9	-36.9

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --			Initial Contract Price		
(U) <u>Design Studies:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn EB Div, Groton, CT					
N00024-92-C-2110, CPFF			\$50.0	N/A	0
Award: October 28, 1993					
Definitized: October 28, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$124.4	N/A	0	\$124.4	\$124.4	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
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 Level of Effort Contract with cost reporting at the task level.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 23.5% (4 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 24.4% (\$910.0 / \$3732.1)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2008)</u>	<u>Total</u>
RDT&E	910.0	455.3	511.8	1855.0	3732.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	910.0	455.3	511.8	1855.0	3732.1

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies

1992				23.4	22.8	22.8	22.6	2.8
1993				66.6	66.3	66.3	63.4	2.7
1994				358.2	365.3	362.0	205.4	2.0
1995				434.4	455.6	117.0	13.6	2.7
1996				421.4	455.3			3.0
1997				459.9	511.8			3.0
1998				393.2	450.6			3.0
1999				253.9	299.7			3.0
2000				191.0	232.2			3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obl1- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

2001				186.4	233.5			3.0
2002				87.6	113.0			3.0
2003				76.0	101.0			3.0
2004				73.8	101.0			3.0
2005				78.0	110.0			3.0
2006				106.8	155.0			3.0
2007				20.7	31.0			3.0
2008				18.2	28.0			3.0
Subtot				3249.5	3732.1	568.1	305.0	
Grand Total				3249.5	3732.1	568.1	305.0	

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AF-5 CMU

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)

PROGRAM: CMU

AS OF DATE: December 31, 1994

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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

COL MICHAEL C. MUSHALA

50 GRIFFISS STREET

Assigned: August 1, 1992

HANSCOM AFB, MA 01731-1622

AV 478-1186 X5020

COMM (617) 271-5020

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0102310F, 0305906F (Shared)

PROCUREMENT:

APPN 3080 ICN 833160 (Air Force)

APPN 3080 ICN 83790S (Air Force) (Shared) Spares

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DFOISR)
DEPARTMENT OF DEFENSE

Q&TSD (PA) DFOISR 95-C-0612

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5. (U) Related Programs:

ITW/AA, BMEWS, PAVE PAWS, SSNIP, ASAT, SPADCCS, DSP, NWS, BMD, AFAMPE, ATWC, JRSC, MILSTAR, JSS, ROCC/SOCC, ASPADOC, IDHS, COBRA DANE, NADS, SREK 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 Air Station (CMAS) 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 CMAS correlation center directly. Space warning data is provided to CMAS through Space Defense Operation Center (SPADOC) and Alternate SPADOC at Dahlgren Naval Space Surveillance Center. Messages are routed through the Communications System Segment Replacement (CSSR) and passed to the mission centers. These mission centers (SPADOC for CMAS only), Air Defense Operations Center (ADOC), and the Missile Warning Center (MWC) use the Command Center Processing and Display System Replacement (CCPDS-R) and Granite Sentry to 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 development programs. 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 Command/Commander-in-Chief, Space Command (CINCNORAD/USCINCSpace) overall Integrated Tactical Warning and Attack Assessment (ITW/AA) system architecture. The consolidation of these programs under the CMU is to satisfy direction contained in the 1989 Appropriations Bill. Granite Sentry Phase I and Space Defense Operation Center (SPADOC) 4A system element achieved Initial Operational Capability (IOC) in 1989. The DAB met in September 1989 and approved a consolidated acquisition and integration approach delineated in the Acquisition Program Baseline (APB) approved by the DAB on 12 Feb 90.

Communications System Segment Replacement (CSSR) Technical Control

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7a. (U) Program Highlights (Cont'd):

Subsystem (TCS) achieved IOC on 11 Apr 91. CSSR Message Processing and Distribution System (MPDS) achieved IOC on 14 Aug 91. CSSR Black Technical Control achieved IOC 9 Feb 94.

Granite Sentry Phase II IOT&E was completed in August 1991. Granite Sentry (Phase III) (Missile & Space Warning) IOC, Granite Sentry (Missile Wrng) IOC and Granite Sentry (NCC) (NORAD Command Center) IOC were completed Dec 91. The Granite Sentry software development effort was transferred to Air Force Materiel Command (AFMC). AFMC combined engineering, hardware and software engineering into one effort and a contract was awarded to Martin Marietta 7 Apr 93.

The Survivable Communications Integration System (SCIS) experienced schedule delays due to a change in the threat environment and contractor delays in software development and system testing. The contractor submitted a favorable recovery plan and since has remained on track.

SPADOC 4B reached IOC on 30 Jul 91. SPADOC 4C Version 1 IOC was declared on 28 Jan 94. SPADOC 4C Version 2 is in development testing.

The Cheyenne Mountain Upgrade (CMU) Integrated Weapon System Management (IWSM) Concept of Operations (CONOPS) implementation was completed on 31 Aug 93. The System Support Manager, and the Sacramento Air Logistics Center (SM-ALC) Space Systems Support Group (SSSG) are now an integral, functioning part of the Cheyenne Mountain Complex System Program Office (SPO).

Command Center Processing and Display System Replacement (CCPDS-R) Missile Warning (Common Subsystem) IOC was declared 8 Sep 94.

The facility preparation and communication equipment and installation at Alternate Processing and Correlation Center (APCC) were completed.

The Program Office (PO) reviewed the entire CMU schedule based on lessons learned from the CCPDS-R testing. The SPO reported that the Program would breach its Dec 95 Final Operational Capability (FOC). The Program Office (PO) briefed SAF/AQ and the OSD/C3I Systems Committee in Aug 94 and the CMU Re-Plan was approved. The Acquisition Program Baseline (APB) was approved by the AFAC 24 Sep 94.

Based on the approved ABP the CMU Program reflects the following:
Phase I - includes CCPDS-R Single String, SCIS Mini-Net, Strategic

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7a. (U) Program Highlights (Cont'd):

Summary Displays, SPADOC 4CV2 with CSS, and APCC (Missile Warning Mission); Phase II - includes SSCN and SCIS/PDS, and SCIS I4 with Missile Warning Mission IOT&E; Phase III - includes Missile Warning Remote from APCC and Granite Sentry (CMAS); Phase IV - includes SPADOC 4CV2 with CSSR.

After delivery of Phase I, the CMU will be continuously upgraded through an incremental acquisition approach. Subsequent phases will be delivered approximately every twelve months. The detailed content of each phase will be determined on user priorities. Phase I through Phase IV constitute the total CMU Program.

b. (U) Significant Developments Since Last Report --
Missile Warning Mission: The Command Center Processing and Display System Replacement (CCPDS-R) Strategic Summary Displays entered final testing prior to operational acceptance. Scheduled completion is Mar 95.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --
The Combined Intel Watch Center (CIWC) Processing and Display System (PDS) was operationally accepted in Jan 95.

The Survivable Communication Integration System (SCIS) completed operational assessment testing 7 Feb 95.

8. (U) Threshold Breaches:

There are no breaches to the SAE approved Acquisition Program Baseline (APB) dated 28 Sep 94. There is no Nunn-McCurdy unit cost breach.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Granite Sentry Phase II	MAR 90	N/A	N/A
Granite Sentry (Phase III) (Missile & Space Wrng)	MAR 91	DEC 91	DEC 91
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

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Granite Sentry Phase IVA IOC	MAR 92	N/A	N/A
SCIS Installation/Checkout Complete	MAR 92	N/A	N/A
CCPDS-R Missile Warning (Common Subsystem) IOC	SEP 93	N/A	SEP 94
CSSR Operational Date (Blck Tech Control)	N/A	SEP 93	FEB 94
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 Installation Complete (APCC)	N/A	SEP 94	FEB 94
SCIS (Additional Media)	DEC 94	N/A	N/A
OPCC Missile Warning	DEC 94	N/A	N/A
CCPDS-R (SAC Force Management) IOC	DEC 94	N/A	N/A
Granite Sentry Phase VI IOC	MAR 95	N/A	N/A
SPADOC 4C IOC	SEP 95	N/A	N/A
OPCC (Air Warning/CCP) IOC	DEC 95	N/A	N/A
Systems of Systems IOT&E	DEC 95	N/A	N/A
System Turnover/FMRT	SEP 96	N/A	N/A
CMU Phase I Delivery	N/A	NOV 95	NOV 95
CMU Phase II Delivery	N/A	APR 96	APR 96
Missile Warning IOT&E	N/A	JUN 96	JUN 96
CMU Phase III Delivery	N/A	APR 97	APR 97
Air Warning QA	N/A	JUN 97	JUN 97
CMU Phase IV Delivery	N/A	APR 98	APR 98
Space Warning QA	N/A	JUN 98	JUN 98
Integrated Mission IOT&E	N/A	MAR 99	MAR 99

ACRONYMS

APCC Alternate Processing and Correlation Center
 CCP Command Center Processor
 CCPDS-R Command Center Processing and Display System Replacement
 CMU Cheyenne Mountain Upgrade
 CSSR Communications System Segment Replacement
 NCC NORAD Command Center
 OPCC Offutt Processing and Correlation Center
 P3I Pre-Planned Product Improvement
 SAC Strategic Air Command
 SCIS Survivable Communications Integration System

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9b. (U) Schedule (Cont'd):

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 was planned 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.

Granite Sentry (Phase III) (Missile and Space Warning) changed from N/A to Dec 91 to reflect the actual date of completion.

Granite Sentry Completion was adjusted from Nov 95 to Jun 95 due to negotiations with the prime contractor Martin Marietta Co (MMC).

SPADOC 4C IOC changed from Aug 95 to Sep 95 to correct an administrative error in the 31 Dec 91 SAR.

OPCC has been renamed APCC. The schedule information for OPCC (Air Warning/CCP) IOC will now be tracked under the milestone called APCC (Air Warning/CCP) IOC.

CMU is an upgrade of an existing system. Under the new Air Force Materiel Command, System Turnover/PMRT is no longer required. Therefore, this item has been deleted from APB.

CCPDS-R Missile Warning (Common Subsystem) IOC was adjusted from Sep 93 to Jun 94. IOT&E was re-started 4 Jan 94 due to GFE communication network difficulties, software fixes, and operational/test considerations. IOC was declared 8 Sep 94.

CSSR Operational Date (Blk Tech Control) IOC was adjusted from Sep 93 to Feb 94. Delay was attributed to correction of deficiencies and required regression testing by AFOTEC. IOC was declared 9 Feb 94.

Based on the 28 September 1994 approved APB, the Program will be

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9b. (U) Schedule (Cont'd):

delivered in Phases: SCIS Installation Checkout Complete - to be delivered in parts throughout Phases I, II and III; CCPDS-R (SAC Force Management) IOC - to be completed in Phase I; Granite Sentry Completion - to be completed in Phase III; SPADOC 4C IOC - to be completed in Phase IV; APCC (Air Warning/CCP) IOC deleted, however APCC with Missile Warning Remote is to be completed in Phase III; Systems of Systems IOT&E - to be completed as a part of Integrated Mission IOT&E; CMU FOC - to be completed as part of Integrated Mission IOT&E; SCIS IOC - to be completed in Phase II.

Additional stub items were added in the SEP 94 SAR:
CMU Phase I Delivery, CMU Phase II Delivery, Missile Warning IOT&E,
CMU Phase III Delivery, Air Warning OA, CMU Phase IV Delivery, Space
Warning OA and Integrated Mission IOT&E.

CCPDS-R Missile Warning (Common Subsystem) IOC was declared on 8
Sep 94.

CSSR Installation was completed at APCC on 28 Feb 94.

c. (U) Current Change Explanations -- None.

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:

AFAE Approved Acquisition Program Baseline dated September 28, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

Message Accountability

(b)(1)

System Initialization

(min)

Missile	31	N/A	/ N/A	31	31
Air	26	N/A	/ N/A	26	26
Space	26	N/A	/ N/A	26	26

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10a. (U) Performance Characteristics (Cont'd):

	Approved Program	Demon- strated	Current
<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>
Mean Restoral Time (Min)			
(b)(1)			
Operational Availability			
(b)(1)			

b. (U) Previous Change Explanations --

(U) Message Accountability (Missile) was changed from 10^7 to 5×10^7 to reflect the CMU Systems Operational Requirements Document (SORD) dated 7 Aug 90. Message Accountability (Missile) was changed from 10^7 to 5×10^7 in the current estimate to correct a typographical error in the 31 Dec 90 SAR submission. The current estimate deleted System Initialization, added Mean Restoral Time, added stub items for non-availability under Operational Availability, updated air under Information Delivery Time and updated Mode Change (Exercise - Real) from (sec max) to (sec 98%) to reflect the CMU approved Acquisition Program Baseline (APB) dated 3 Sep 92.

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.

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10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:

APAE Approved Acquisition Program Baseline dated September 28, 1994.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1188.1	1230.4	1327.9
Procurement	321.2	347.6	338.8
Flyaway	(321.2)		(299.7)
Other Wpn Sys Cost	(0.0)		(12.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(26.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	1509.3	1578.0	1666.7
Escalation	71.7	85.0	105.9
Development (RDT&E)	(58.4)	(63.6)	(90.0)
Procurement	(13.3)	(21.4)	(15.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1581.0	1663.0	1772.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
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.

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:

APAE Approved Acquisition Program Baseline dated September 28, 1994.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY89\$)	1666.7	1578.0	
(2) Quantity	1	1	
(3) Unit Cost	1666.70	1578.00	5.62
b. (U) Procurement			
(1) Cost (BY89\$)	338.8	347.6	
(2) Quantity	1	1	
(3) Unit Cost	338.80	347.60	-2.53

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.

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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	-11.9	-1.0	-	-12.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+1.5	-	-	+1.5
Estimating	+45.9	-28.6	-	+17.3
Other	-	-	-	-
Support	-	+65.1	-	+65.1
Subtotal	+35.5	+35.5	-	+71.0
Current Changes:				
Economic	0.5	-0.5	-	+0.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	2.1	-	-	+2.1
Estimating	133.3	0.1	-	+133.4
Other	-	-	-	-
Support	-	-14.9	-	-14.9
Subtotal	+135.9	-15.3	-	+120.6
Total Changes	+171.4	+20.2	-	+191.6
Current Estimate	1417.9	354.7	-	1772.6

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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	+1.3	-	-	+1.3
Estimating	+31.9	-22.7	-	+9.2
Other	-	-	-	-
Support	-	+51.0	-	+51.0
Subtotal	+33.2	+28.3	-	+61.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	1.7	-	-	+1.7
Estimating	104.9	-	-	+104.9
Other	-	-	-	-
Support	-	-10.7	-	-10.7
Subtotal	+106.6	-10.7	-	+95.9
Total Changes	+139.8	+17.6	-	+157.4
Current Estimate	1327.9	338.8	-	1666.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation rates. Adjustment for negative program change.

Engineering: Increase for ECP for replacement of SPADOC Megatak Consoles.

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). General reductions for consultants and SBIR (Small Business Innovative Research). President's Budget adjustments. Withdrawal of excess funds.

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13b. (U) Cost Variance Analysis (Cont'd):

Additional funds provided for CCPDS-R Strategic Summary Displays. Congressional adjustments to Non-FFRDC. Reduction for Special Studies to evaluate potential disconnects.

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). Adjustment to data base to remove AFSPACECOM and USSPACECOM procurements from CMU budget. Realignment to acquisition for additional hardware. FFRDC reduction.

Support: Additional funding for Initial Spares as stated in APB (Change 2), and additional funding for Interim Contractor Support. Adjustment of data base to remove non-CMU program spares. Increase in Initial Spares.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	+0.5
FY94 increase for engineering requirements. (Engineering)	+1.7	+2.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.7	-0.7
Additional funds provided for CMU Replan in FY96-FY98. (Estimating)	+31.8	+40.9
FY94 reduction for Small Business Innovative Research (SBIR) (Estimating)	-1.3	-1.6
FY95 adjustments due to the following: FFRDC, Non-FFRDC, university research and computer support, TDY and SBIR. (Estimating)	-4.5	-5.6
Inclusion of FY93 and beyond ITW/AA funds. (Estimating)	+47.4	+60.3
Inclusion of Cheyenne Mountain Training System funds. (Estimating)	+6.1	+7.6

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13c. (U) Cost Variance Analysis (Cont'd):

(Dollars in Millions)		
	<u>Base-Year</u>	<u>Then-Year</u>
Congressionally directed transfer of O&M funds to RDT&E for the Cheyenne Mountain Legacy Interface (Space Warning System Center). (Estimating)	+26.1	+32.4
RDT&E Subtotal	+106.6	+135.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+0.5
Adjustment to data base to include funding for AFSPC Command and Control. (Estimating)	+0.3	+0.4
Reduction to funding for changes in Interim Contractor Support (ICS). (Estimating)	-0.7	-0.8
Reduction to funding for changes in spares requirements. (Support)	-10.7	-14.9
Procurement Subtotal	-10.7	-15.3

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1581.00	-12.90	--	--	3.60	150.70	--	50.20	191.60	1772.60

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --	Initial Contract Price		
(U) SCIS:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
E - Systems, St. Petersburg, FL			
F19628-86-C-0131, FPIF/AF	\$26.9	\$30.3	6
Award: August 21, 1986			
Definitized: August 21, 1986			

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$98.1	\$110.8	26	\$107.6	\$107.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-11.9	\$-0.3
Cumulative Variances To Date (11/27/94)	<u>\$-11.9</u>	<u>\$-0.3</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

Changes to current contract target price reflects additional funds placed on contract for delivery and acceptance of 4 Phase I sites and delivery and acceptance of the I4 software baseline at all sites.

There is no overall impact to the contract or program.

(U) <u>CCPDS-R:</u> TRW INC., Carson, CA F19628-87-C-0047, FPIF/AF Award: June 3, 1987 Definitized: June 3, 1987	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$58.9	\$64.3	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$182.8	\$190.1	21	\$185.5	\$185.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.8	\$-0.4
Cumulative Variances To Date (12/02/94)	<u>\$-5.5</u>	<u>\$-0.1</u>
Net Change	\$-0.7	\$0.3

Explanation of Change:

Current contract target/ceiling changes reflect additional funds placed on contract to cover IOC slip (per 28 Sep 94 approved APB).

The net change in cost and schedule variances are due to incorporation of IOC reschedule proposal. There is no overall impact to the program.

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15. (U) Contract Information (Cont'd):

(U) <u>SPADOC-4C:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Loral Aerospace Corp, Colorado Springs, CO	\$57.1	N/A	1		
F19628-91-C-0169, CPIF/AF					
Award: October 25, 1991					
Definitized: October 25, 1991					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$59.4	N/A	1	\$59.6	\$55.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.6	\$-0.2
Cumulative Variances To Date (10/21/94)	\$3.7	\$-0.1
Net Change	\$0.1	\$0.1

Explanation of Change:

The change in current contract price is due to incorporation of a software Engineering Change Proposal (ECP). The net change in schedule variance is insignificant but, OT&E more rigorous than planned. The net change in cost variance is significant but favorable since indirect rates were lower than original contractor estimates.

Price and variance data for this contract are for Block C only and have no negative impact on program.

(U) <u>CSSR Subset AOC #2:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
GTE Government Syst Corp, Needham Heights, MA	\$21.1	N/A	1		
F19628-92-C-0046, CPIF/AF					
Award: January 28, 1992					
Definitized: July 24, 1992					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$21.4	N/A	1	\$19.0	\$19.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.1	\$0.0
Cumulative Variances To Date (11/25/94)	\$3.0	\$0.0
Net Change	\$-0.1	\$0.0

Explanation of Change:

The net change in cost variance is due to efficiencies in System

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15. (U) Contract Information (Cont'd):

Engineering and Program Management Support. There is no cost or schedule impact to the contract or the program.

(U) <u>Granite Sentry:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Martin-Marietta Corp., Colorado Springs, CO			
F19628-93-C-0036, CPIF/AF	\$28.6	N/A	1
Award: April 7, 1993			
Definitized: March 15, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$29.2	N/A	1	\$29.2	\$32.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.2	\$-0.5
Cumulative Variances To Date (11/27/94)	\$-2.2	\$-1.3
Net Change	\$-1.0	\$-0.8

Explanation of Change:

The net change in cost and schedule variances are a result of the contractor using significant overtime to maintain the software development schedule. There is no overall impact to the contract or the program.

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: 92.5% (\$1639.7 / \$1772.6)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY78-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	1309.0	60.8	27.9	20.2	1417.9
Procurement	330.7	9.2	6.3	8.5	354.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1639.7	70.0	34.2	28.7	1772.6

c. (U) Annual Summary --

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

1978				4.6	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
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	92.8	2.7

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1987				95.3	91.9	91.9	91.9	2.8
1988				111.9	110.8	110.8	110.6	3.0
1989				114.2	118.4	118.4	118.4	4.2
1990				97.1	103.9	103.9	102.4	4.0
1991				95.8	106.3	106.3	102.7	4.3
1992				104.8	119.8	119.8	119.6	2.8
1993				131.7	153.8	153.8	134.7	2.7
1994				111.0	132.5	121.8	80.3	2.0
1995				103.7	127.4	25.5	2.0	2.7
1996				48.1	60.8			3.0
1997				21.4	27.9			3.0
1998				4.6	6.2			3.0
1999				3.2	4.4			3.0
2000				3.3	4.7			3.0
2001				3.3	4.9			3.0
Subtot				1327.9	1417.9	1196.4	1105.9	

Obligation and expenditure data reflect program office records as of
24 January 1995.

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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	49.1	2.7
1987			17.5	17.5	17.5	17.5	17.5	2.8
1988			18.0	18.0	18.7	18.7	18.3	3.0
1989			37.7	37.7	40.5	40.5	40.3	4.2
1990			36.4	36.4	40.3	40.3	39.3	4.0
1991			6.3	6.2	7.1	7.1	7.0	4.3
1992			14.6	18.4	21.6	19.5	17.9	2.8
1993			11.9	23.2	27.7	23.6	12.7	2.7
1994			11.9	14.7	18.1	12.9	9.3	2.0
1995	1		1.2	4.7	5.9			2.7
1996				7.0	9.2			3.0
1997				4.7	6.3			3.0
1998				2.5	3.4			3.0
1999				0.9	1.3			3.0

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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)

2000				1.3	1.9			3.0
2001				1.3	1.9			3.0
Subtot	1		299.7	338.8	354.7	313.4	295.6	
Grand Total	1		299.7	1666.7	1772.6	1509.8	1401.5	

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. Quantity will always be carried in the current year.

Obligation and expenditure data reflect program office records as of 24 January 1995.

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (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 8 Jul 92.

Operations Concept - At Full Operational Capability (FOC), Air Force Space Command (AFSPC) will take over complete day-to-day operating responsibility to perform the mission. Each operational center has

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18a. (U) Operating and Support Costs (Cont'd):

five crews to support the 24 hour mission.

Maintenance Concept - AFSPC 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. AFSPC 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.

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 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.

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

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18a. (U) Operating and Support Costs (Cont'd):
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.

k. 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.

c. (U) Contractor Support Costs -- None.

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18c. (U) Operating and Support Costs (Cont'd):

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.

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AF-2 AWACS RSIP
(E-3)

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: E-3 AWACS RSIP

AS OF DATE: December 31, 1994

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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:
RSC/AW COL EDWARD G. TAYLOR
3 EGLIN STREET Assigned: February 1, 1994
HANSCOM AFB, MA 01731-2115 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)

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FOR OPEN PUBLICATION
AS AMENDED

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

~~Classified by: 1-2 SECRETARY OF DEFENSE, 14 June 1995~~
~~Declassify on: Originating Agency Determination Required (OADR)~~
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E-3 AWACS RSIP, December 31, 1994

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 Cathode Ray Tube (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: EMD contracts were awarded on 25 September 1989 to Westinghouse Electric Corporation for the radar upgrade and to The Boeing Company for the system integration and testing of the radar in the aircraft. The RSIP acquisition schedule is intended to maximize concurrent installation with the Block 30/35 retrofit. 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 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. NATO began observing the monthly US RSIP Program Management Reviews in

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7a. (U) Program Highlights (Cont'd):

September 1990 to facilitate their potential future participation in the RSIP EMD effort. RSIP Brassboard Data Gathering Flight tests were conducted on Test System - 3 (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.

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 Westinghouse software delivery and "8.6dB" ground radar sensitivity test schedule. This action minimized the delay and cost impact on the associate contract.

The NATO/RSIP Cooperative International R&D Agreement was signed in Washington, DC on 7 May 1992.

The 8.6 dB Lab Radar Demo was successfully completed on 15 September 1992 and the government has verified test results showing a 10.34 dB improvement in the laboratory environment.

The Fixed Price Determination for NATO RSIP Phase II was approved by OUSD(A) in November 1992. (NATO Phase II is mainly for installation, check-out and test of the NATO Group A and B kits in a NATO E-3 aircraft.)

Westinghouse contract modification titled "Contract Interpretation Resolution" was issued 29 October 1993, adjusting the Westinghouse contract schedule and relaxing the timing and sizing specification. On 30 November 1993, Test System-3 (TS-3) Installation & Check Out (I&CO) was completed, and first DT&E flight was accomplished.

On 14 January 1994, the NATO Radar System Improvement Program (RSIP) Boeing Phase I contract was definitized (Boeing Phase I is for a NATO Group A kit and development of NATO Airborne Operational Computer Program (AOCP) software.)

On 09 August 1994, the E-3 AWACS RSIP Acquisition Program Baseline (APB) change request #4 was approved and signed.

The NATO Phase II effort was definitized on 30 August 1994 and the Westinghouse NATO Phase II effort definitized in September 1994.

b. (U) Significant Developments Since Last Report --

The Qualification Phase of the DT&E Flight Test effort was begun on 22 November 1994. This is the final Flight Test Phase prior to entering IOT&E.

AFOTEC, HQ/ACC, NATO and the Program Office reached concurrence on a strategy for IOT&E on 1 December 1994.

Production RFP and Acquisition Plan was released in December to HQ ESC for review.

The program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date -- --None.

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8. (U) Threshold Breaches:

There are no breaches to the approved AFAE Acquisition Program Baseline (APB) (dated 09 August 1994) and no Nunn-McCurdy unit cost breaches.

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) I&CO	SEP 92	NOV 93	NOV 93
Advance Procurement Authorization	JUN 93	N/A	N/A
Flight Test DT&E			
Start	N/A	JAN 94	NOV 93
Complete	SEP 93	JAN 95	MAR 95
IOT&E			
Start	N/A	AUG 95	JUL 95 (Ch-1)
Complete	DEC 93	DEC 95	DEC 95
Physical Configuration Audit	DEC 93	DEC 95	DEC 95
Low Rate Initial Production Decision	MAR 94	NOV 95	NOV 95
Trial Installation	SEP 95	OCT 97	OCT 97
IOC (5 aircraft)	SEP 96	DEC 99	DEC 99
Required Assets Available	N/A	DEC 99	DEC 99

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 cathode ray tube display design delayed RCMP CDR. Software CDR

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9b. (U) Schedule (Cont'd):

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, Physical Configuration Audit (PCA), Production decision and Trial Installation.

The Dec 92 SAR reported that the following EMD milestones: Test System-3 Installation & Check Out (TS-3 I&CO), Flight Test DT&E, IOT&E and Physical Configuration Audit (PCA) were delayed. This was mainly due to Associate Contractor Westinghouse not being able to develop/integrate software at the rate anticipated at Critical Design Review (CDR). Also the Production (LRIP) decision and the IOC (Required Assets Available) milestones had slipped due to a two year delay in the start of production directed by the FY 94 President's budget.

The Dec 93 SAR reported the following changes. I&CO was changed from Oct 93 to Nov 93 due to Westinghouse not being able to develop / integrate software at the anticipated rate. The DT&E flight test completion date was changed from Nov 94 to Jan 95 to realign the dates to the current test schedule. IOT&E start date was changed from May 95 to Aug 95 to allow time for flight data reduction and report approval. IOT&E completion dates were adjusted accordingly. PCA was changed from Sep 95 to Dec 95 since PCA is defined as the final PCA session which should occur after all action items are complete. LRIP decision was changed from Oct 95 to Nov 95 with the Trial Installation changing by one month accordingly.

The Sep 94 SAR reported the following changes. Flight test DT&E completion has moved from Jan 95 to Mar 95 to accomodate start up problems at the beginning of flight test. PMD 60 dated 11 May 94 changed the definition of IOC from 4 aircraft to 5 aircraft. The APB was updated on 09 Aug 94 to reflect the change in IOC and RAA dates.

c. (U) Current Change Explanations --

(Ch-1) Current Estimate for start of IOT&E has changed from Aug 95 to Jul 95. The RSIP program is now successfully meeting objectives and schedules, including Flight Qualification Test and progress to date indicates that the program will successfully enter IOT&E in July 1995.

d. (U) References --

(U) Development Estimate:

FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:

AFAP Approved Acquisition Program Baseline dated August 09, 1994.

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10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Improve System Sensitivity (dB)	10.6	13.0 / 10.6	N/A	10.6

(b)(1)

Reliability (Radar Set) Overland Mission MTBCF (hrs)	486	486 / 486	N/A	486
System MTBCF (hrs)	1400	N/A / N/A	N/A	1400
Series MTBCMA (hrs)	100	N/A / N/A	N/A	100

(b)(1)

Maintainability (SRC/SRCMP)				
Mean Repair Time (hrs)	.26	.26 / .26	N/A	.26
Fraction of Failures detected (%)	98	98 / 98	N/A	98

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

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10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Development Estimate:

FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated August 09, 1994.

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	374.7
Procurement	222.1	320.6	321.8
Flyaway	(175.1)		(248.5)
Other Weapon Systems	(29.4)		(60.6)
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	0.0	0.0
Total FY 89 Base-Year \$	571.8	688.5	696.5
Escalation	118.1	159.2	196.9
Development (RDT&E)	(47.0)	(38.6)	(50.8)
Procurement	(71.1)	(120.6)	(146.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	689.9	847.7	893.4
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.

c. (U) Foreign Military Sales/International Cooperative Programs -- NATO:

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 added the Boeing Phase II effort on 14 Jan 94 and the Westinghouse Phase II

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11c. (U) Total Program Cost and Quantity (Cont'd):

effort on 21 Jan 94 to these same contracts. During Phase I Westinghouse is providing one more RSIP Group B radar set modification kit 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, working with NATO, has developed a comprehensive strategy to implement a joint U.S. - NATO development test program for RSIP. Under the joint test concept, NATO will participate in testing on the U.S. test aircraft and will accomplish the majority of NATO testing on the same aircraft. Joint test will be implemented as part of the Phase II portion of the NATO RSIP effort. The RSIP Program Office expects NATO to buy production kits for all 18 NATO aircraft.

United Kingdom:

On 31 March 1993, the United Kingdom (UK) signed a \$5.6M Letter of Offer and Acceptance (LOA) to conduct a pre-production study for incorporating production US/NATO RSIP kits into the fleet of seven (7) UK E-3D AWACS aircraft. The study consist of two parts: Phase IA provides technical information sufficient to identify differences in the UK configuration while Phase IB designs any adaptations necessary and prepares the production Request for Proposals (RFPs) and LOA. The Boeing Company was placed on contract (EST 93-UK-04A) 13 July 1993 with the Westinghouse Corporation placed on directed subcontract on 1 September 1993 to support Phase I. Including the \$5.8M Phase IB LOA option, the study will run for approximately two years. UK requirement is to buy production kits for all 7 UK aircraft and 1 ground laboratory.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:

AFAB Approved Acquisition Program Baseline dated August 09, 1994.

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12. (U) Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (AUG 94 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY89\$)	696.5	688.5	
(2) Quantity	34	34	
(3) Unit Cost	20.485	20.250	1.162
b. (U) Procurement			
(1) Cost (BY89\$)	321.8	320.6	
(2) Quantity	34	34	
(3) Unit Cost	9.465	9.429	0.374

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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	396.7	293.2	0.0	689.9
Previous Changes:				
Economic	-3.1	-8.2	-	-11.3
Quantity	-	-	-	-
Schedule	+48.4	+86.9	-	+135.3
Engineering	-76.7	-	-	-76.7
Estimating	+60.2	+42.1	-	+102.3
Other	-	-	-	-
Support	-	+53.9	-	+53.9
Subtotal	+28.8	+174.7	-	+203.5
Current Changes:				
Economic	0.6	-2.3	-	-1.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.6	15.6	-	+15.0
Other	-	-	-	-
Support	-	-13.3	-	-13.3
Subtotal	-	0.0	-	0.0
Total Changes	+28.8	+174.7	-	+203.5
Current Estimate	425.5	467.9	-	893.4

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	349.7	222.1	0.0	571.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	+32.1	+35.2	-	+67.3
Engineering	-62.0	-	-	-62.0
Estimating	+55.5	+28.1	-	+83.6
Other	-	-	-	-
Support	-	+35.5	-	+35.5
Subtotal	+25.6	+98.8	-	+124.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.6	10.1	-	+9.5
Other	-	-	-	-
Support	-	-9.2	-	-9.2
Subtotal	-0.6	+0.9	-	+0.3
Total Changes	+25.0	+99.7	-	+124.7
Current Estimate	374.7	321.8	-	696.5

b. (U) Previous Change Explanations --

RD&E

Economic: Revised economic escalation indices.

Schedule: Revised production schedule to allow for completion of qualification testing. Stretched FY 1989-94 program through FY 1996.

Engineering: Depot activation costs transferred to RD&E funding (FY 92-93) from procurement funding (FY93). Depot development descope. FY 91 Congressional reduction; Must be covered by NATO funding. Specification changes to existing contract. Reduction of US program due to NATO share of development cost.

Estimating: Current and prior years inflation offset. Funded

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13b. (U) Cost Variance Analysis (Cont'd):

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 AWACS Desert Storm assessment. Revised estimate of engineering change orders. Revised estimate of program office support requirements. Revised estimate due to impact of inflation indices.

Procurement

Economic: Revised economic escalation indices.

Schedule: Revised production schedule to allow completion of qualification testing. Slip in program start from FY 94 to FY 96 (prod. break & econ. esc. affect incl.) & completion from FY 98 to FY 02.

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. Revised estimate of Group A kits based on EMD actuals. Revised estimate of Group B kits based on EMD actuals. Revised estimate of installation based on install hours and labor hourly rate increase. Revised estimate of non-recurring requirements. Realigned funding to year of kit install to comply with funding policy.

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. Additional PSE requirements. Data estimate revised. Increase to SPO support. Additional requirements for Avionics Integration Support Facility, Commodity Mod Kits, and Interim Contractor Support. Revised estimate for Initial Spares.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)

N/A

+0.6

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for Current & Prior Inflation. (Estimating)	-0.6	-0.6
RDT&E Subtotal	-0.6	--
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-2.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.3
Due to change in Contract Acquisition Strategy from Assoc/Assoc to Prime/Sub, contract management cost moved from SPO (-13.3) to Prime Contractor (+15.6). (Estimating)	+10.1	+15.6
Due to change in Contract Acquisition Strategy from Assoc/Assoc to Prime/Sub, contract management cost moved from SPO (-13.3 to Prime Contractor (+15.6). (Support)	-9.2	-13.3
Procurement Subtotal	+0.9	0.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	20.291

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
20.291	-0.382	--	3.979	-2.256	3.450	--	1.194	5.985	26.276

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) AWACS RSIP (Group B Kit):	Target	Initial Contract Price	
Westinghouse Electric Cor, Baltimore, MD		Ceiling	Qty
F19628-89-C-0138, FPIF	\$223.6	\$251.8	5
Award: September 25, 1989			
Definitized: September 25, 1989			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$280.6	\$314.8	6	\$317.5	\$328.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-60.5	\$-2.9
Cumulative Variances To Date (11/20/94)	\$-65.2	\$-2.6
Net Change	\$-4.7	\$0.3

Explanation of Change:

The change in contractor Estimate at Completion (EAC) is due to inclusion of NATO Phase II effort into contractor's EAC. Current CPR analysis projects a best case of \$326M at completion if WECO performs remaining work with no variance.

The net change of \$4.7M unfavorable cost variance reflects a cost overrun which is primarily due to the Radar Data Processor Operational Software build. This variance is down from the previous delta of \$6.9M unfavorable cost variance. The net change of \$0.3M unfavorable schedule variance is due to correction of discrepancies in software found during flight testing.

(U) AWACS RSIP (Group A Kit):	Target	Initial Contract Price	
The Boeing Company, Seattle, WA		Ceiling	Qty
F19628-89-C-0139, FPIF	\$59.0	\$65.0	3
Award: September 25, 1989			
Definitized: September 25, 1989			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$99.3	\$106.9	4	\$87.6	\$87.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-1.8	\$-1.4
Cumulative Variances To Date (12/29/95)	\$-2.1	\$-1.6
Net Change	\$-0.3	\$-0.2

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15. (U) Contract Information (Cont'd):

Explanation of Change:

Since the previous SAR, the Target Price and Ceiling Price have both increased by \$0.3M. This is for ECP1106-1, Update US RSIP Software, definitized 23 September 1994.

The current contract price reflects the negotiated contract. The contractor's estimated price at completion reflects the full value of the contract. The Program Manager's EAC equals contractor's EAC as there is no indication at this time that the contractor will exceed Target Cost.

Cost and schedule variance have increased slightly in both Direct Cost and overhead. While the primary area of cost variance continues to be overhead, the overhead rate continues to improve on a monthly basis. The net change to cost variance of an unfavorable \$0.3M is primarily due to DT&E. Overhead continues to be the primary cause of increase to unfavorable schedule variance.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 43.8% (7 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 43.9% (\$392.5 / \$893.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY89-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2004)	Total
RDT&E	392.5	31.8	0.3	0.9	425.5
Procurement	-	51.6	53.4	362.9	467.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	392.5	83.4	53.7	363.8	893.4

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.

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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	Obliga- ted	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1989				42.6	44.2	44.2	44.2	4.2
1990				59.5	63.7	63.7	63.6	4.0
1991				64.7	71.8	71.8	71.7	4.3
1992				103.0	117.7	117.7	117.1	2.8
1993				13.2	15.4	15.4	15.0	2.7
1994				31.5	37.6	33.2	13.4	2.0
1995				34.3	42.1	27.0	0.5	2.7
1996				25.1	31.8			3.0
1997				0.2	0.3			3.0
1998				0.2	0.3			3.0
1999				0.2	0.3			3.0
2000				0.2	0.3			3.0
Subtot				374.7	425.5	373.0	325.5	

Appropriation: 3010 Aircraft Procurement, Air Force

1996	2	5.2	17.8	39.1	51.6			3.0
1997	2		21.8	39.3	53.4			3.0

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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: 3010 Aircraft Procurement, Air Force (Cont'd)

1998	4		29.8	49.5	69.3			3.0
1999	5		33.4	37.3	53.8			3.0
2000	8		47.9	53.6	79.6			3.0
2001	7		45.7	48.7	74.5			3.0
2002	6	2.4	44.5	51.1	80.5			3.0
2003				1.7	2.7			3.0
2004				1.5	2.5			3.0
Subtot	34	7.6	240.9	321.8	467.9			
Grand Total	34	7.6	240.9	696.5	893.4	373.0	325.5	

Accounting data for Obligated and Expended is as of 21 September 1994.

17. (U) Production Rate Data:

a. (U) Production Baseline Rate - None.

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17b. (U) Production Rate Data (Cont'd):

b. (U) Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum Economic	Min Sustain less CE	Maximum less CE
FY 1996					
Procurement Cost		51.6		N/A	N/A
Procurement Qty		2		N/A	N/A
Proc. Unit Cost	N/A	25.800	N/A	N/A	N/A
FY 1997					
Procurement Cost		53.4		N/A	N/A
Procurement Qty		2		N/A	N/A
Proc. Unit Cost	N/A	26.700	N/A	N/A	N/A
Balance of Proc. (FY 1998 to Complete)		362.9		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 scheduled to be accomplished at the depot (Oklahoma City ALC) based on the availability 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)),

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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 RSIP is predicted to increase reliability by 40 percent. This estimate was accomplished in May 1992.

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.

An update to the O&S cost estimate is underway.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: Joint STARS GSM

AS OF DATE: December 31, 1994

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FOR OPEN PUBLICATION

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DMO-PA)
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Preferred Name):
Joint STARS Ground Station Module

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-IEW-JS

COL. James L. Mitchell

FT. Monmouth, NJ 07703-5000

Assigned: September 13, 1991

AV 996-5165 COMM 908-544-5165

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)

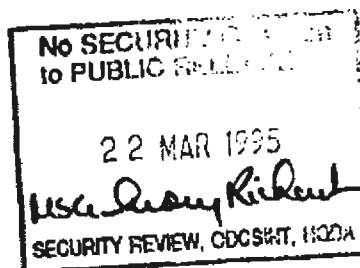
OV-1D Side-Looking Airborne Radar (SLAR) System

Unmanned Aerial Vehicle (UAV) (Imagery)

Bradley Fighting Vehicle System Variant (XM4)

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

Commander's Tactical Terminal (CTT)



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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 Aperture 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. GSMs also receive and process intelligence data from Unmanned Aerial Vehicles (UAV) and Commander's Tactical Terminal (CTT). 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 missiles. 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. 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. 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 subcomponents. In Dec 1988, the GSM program was restructured to capture all user requirements, 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

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Joint STARS GSM, December 31, 1994

7a. Program Highlights (Cont'd):

to be enhanced in a phased effort (IGSM, LPU, Block I, Block II). 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. At this time, Block II improvements involved 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, Operational Field Demonstration (OFD-1) successfully demonstrated the JSTARS system (Aircraft/GSM) capabilities to NATO and US Forces in Europe. 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 CINOCENT (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 Light GSM (LGSM) EMD effort to FY92. The Joint STARS FY93 RDT&E program was increased by \$35M by Congress to complete the acceleration of the Block I Light EMD effort. The current ORD modifies the nomenclature of the various GSM Blocks. Since the system capabilities and Prime Mission Equipment (PME) are essentially the same for all GSMs produced through FY95, the Block II and IIA programs have been redesignated as the Block I Heavy GSM (HGSM) and Block I Light GSM (LGSM) respectively. Consequently, the Block I and Block III GSMs have been redesignated the Block I Medium (MGSM) and Block II (Common Ground Station). The Common Ground Station (CGS, AKA Block II) is anticipated to also be configured in Light and Heavy variants. Based on successful testing the Army System Acquisition Review Council (ASARC) approved Low Rate Initial Production (LRIP) of 12 MGSMs on 10 May 93. The Defense Acquisition Board (DAB) also approved the MGSM LRIP and the exit criteria for the FY95 LGSM LRIP on 23 July 93. The JSTARS revised Acquisition Program Baseline (APB) was approved by the Under Secretary of Defense for Acquisition (USD(A)) on 11 August 93. In addition the (USD(A)) approved the acceleration of the CGS, which will result in an evolutionary P3I program beginning in FY96. The approval of the Acquisition Decision Memorandum (ADM) accelerating the CGS was formally received on 6 November 93.

b. Significant Developments Since Last Report --

The Joint STARS Ground Station Module (GSM) has been designated an Army Lead Program to apply Acquisition Streamlining/Reform initiatives.

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7b. Program Highlights (Cont'd):

On 23 August 1994 the Deputy Secretary of Defense formally approved the Joint STARS GSM nomination. In conjunction with this designation, reclassification of the GSM program from ACAT 1D to ACAT 1C has been requested from OSD. Approval is anticipated. Force Development Test & Evaluation (FDT&E) missions were conducted in August/September 1994 at Ft. Huachuca, Arizona. The LGSM exceeded operational availability requirements and successfully interfaced with the UAV. As part of the LGSM program, a Ground Station Module Training System (GSMTS) was developed, fielded and is currently being used to train Imagery Ground Station Operators (MOS 96H) at the United States Army Intelligence Center & School (USAICS), Ft. Huachuca, Arizona. Cost data for the GSM was prepared for OSD as part of a NATO analysis to evaluate alternative systems to provide airborne reconnaissance capability in support of NATO operations. In October 1994, the GSM and JSTARS aircraft participated in EUROSTAR 94, which resulted in continued NATO interest in the program. As a result of this demonstration, an Embryonic Project Office (EPO) to pursue additional cooperative efforts was created. A Cost and Operational Effectiveness Analysis (COEA) is being conducted in support of the Joint STARS FY96 DAB. Five alternatives are being addressed and results are expected to be available in the 1QFY96. The GSM Acquisition Strategy Report (ASR), has been revised to reflect a maintenance concept that uses life cycle Contractor Logistic Support (CLS) at Depot Level. This maintenance concept was approved by HQDA following completion of a cost comparison analysis of the various life cycle maintenance concepts. The analyses was directed by the Defense Acquisition Executive (DAE) at the FY93 DAB.

The Joint STARS system will satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are schedule breaches to the Approved Acquisition Program Baseline (APB) dated 11 Aug 93. The breaches are the result of the decision to accelerate the Common Ground Station (CGS) Program which resulted in the elimination of the Block I Heavy EMD and production efforts. All Heavy units will now be procured as part of the CGS program, resulting in a breach to each Block I Heavy milestone. The CGS acceleration was directed by the Defense Acquisition Executive in Oct 93. In addition there are breaches to the LGSM first LRIP delivery, first unit equipped, and organic support milestones. These changes were caused by a delay in the LGSM contract award and the addition of a Production Qualification Test (PQT) requirement prior to first delivery. A revised Acquisition Strategy Report and Acquisition Program baseline are currently being staffed. There are no Nunn-McCurdy unit cost breaches.

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9. Schedule:

a. Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
INTERIM GSM			
FSD Award	AUG 84	AUG 84	AUG 84
CDR	FEB 85	FEB 85	FEB 85
Force DT&E	FEB 90	N/A	N/A
Joint SLPA/GD/OA:			
Start	OCT 90	SEP 90	SEP 90
Complete	N/A	SEP 91	N/A
First Unit Equipped	OCT 93	OCT 93	OCT 93
LPU GSM			
Limited Prod Contract Award	SEP 87	SEP 87	SEP 87
ARDS Eval (UK)	N/A	NOV 88	NOV 88
FDT&E			
Start	JUN 89	AUG 89	N/A
First Delivery	N/A	JUL 89	JUL 89
ARDS Eval (France)	N/A	AUG 89	AUG 89
First US Unit Equipped	JUN 90	MAY 90	MAY 90
Type Classification (LPU)	N/A	JUL 92	JUL 92
Block I (Medium) GSM			
FSD Award	AUG 89	SEP 89	SEP 89
CDR	N/A	JUL 90	NOV 90
PDR	MAR 90	N/A	MAR 90
Development Test			
Start	N/A	APR 92	APR 92
Complete	N/A	SEP 92	SEP 92
Milestone III	NOV 92	N/A	N/A
LRIP Decision	N/A	JUL 93	JUL 93
LRIP Contract Award	DEC 92	JUL 93	SEP 93
First Production Delivery	N/A	NOV 95	FEB 96(Ch-1)
Production Qualification Test (PQT)			
Start	N/A	MAY 95	JUL 95(Ch-1)
Complete	N/A	AUG 95	OCT 95(Ch-1)
Organic Support Capability (MGSM)	N/A	FEB 96	FEB 96
Depot Support Capability (MGSM)	N/A	JAN 97	N/A (Ch-2)
First Unit Equipped	SEP 94	FEB 96	FEB 96
NOTE			
Start	N/A	JUN 95	NOV 95(Ch-3)
Complete	N/A	FEB 96	FEB 96(Ch-3)
Block I (Heavy) GSM			
Early Prototype And	N/A	JAN 92	JAN 92
EMD Award	OCT 92	AUG 93	N/A
CDR	APR 93	JUL 94	N/A

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
FDT&E			
Start	JAN 94	N/A	N/A
Development Test			
Start	N/A	OCT 94	N/A
Complete	N/A	MAR 95	N/A
NOTE			
Start	N/A	JUN 95	N/A
Complete	N/A	FEB 96	N/A
Milestone III	N/A	JUN 96	N/A
Production Award	MAR 95	JUN 96	N/A
First Unit Equipped	MAR 97	JUN 99	N/A
Block I (Light) GSM (LGSM)			
EMD Award	N/A	MAY 92	MAY 92
CDR	N/A	JUN 93	AUG 93
Development Test			
Start	N/A	MAR 94	MAR 94
Complete	N/A	SEP 95	SEP 95
LRIP Decision	N/A	MAR 95	MAR 95
NOTE			
Start	N/A	JUN 95	NOV 95(Ch-3)
Complete	N/A	FEB 96	FEB 96(Ch-3)
Milestone III	N/A	JUN 96	N/A (Ch-4)
Full Rate Production Award	N/A	JUN 96	N/A (Ch-4)
First Low Rate Production Delivery	N/A	SEP 96	JUN 97(Ch-5)
First Full Rate Production Delivery	N/A	JAN 98	N/A (Ch-4)
First Unit Equipped	N/A	APR 97	NOV 97(Ch-5)
Organic Support Capability (LGSM)	N/A	APR 97	NOV 97(Ch-5)
Depot Support Capability (LGSM)	N/A	JUN 97	N/A (Ch-2)
Block II Common Ground Station (CGS)			
First Delivery	N/A	MAR 02	MAY 98
First Unit Equipped	N/A	JUN 02	AUG 98
Organic Support Capability (CGS)	N/A	JUN 02	AUG 98
Depot Support Capability (CGS)	N/A	JUN 02	N/A (Ch-2)

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) Block I Medium GSM (MGSM) Contract Award (CA) was changed to reflect actuals. First Unit Equipped (FUE), Block II Heavy GSM (HGSM) FDT&E, PDR and CDR were changed to correct program office reporting errors.

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9b. Schedule (Cont'd):

Approved Acquisition Program Baseline milestones added to SAR reporting. The GD and QA milestones were Air Force only and have been deleted. Late subcontractor material deliveries delayed Block I Medium (MGSM) TT/UT, Milestone III (LRIP), and CA. This in turn caused Block I delays to the First MGSM Production Delivery (FPD), First Article Test (FAT), and FUE. The acceleration of the Block IIA Light GSM (LGSM) has caused delays in the Block II (HGSM) FSD Award, CDR, Production IPR, Production Award, FPD and FUE. The Block II (HGSM) FDT&E start and complete is no longer an applicable milestone per current TEMP and has been deleted. Block I Medium Milestone III and Block I CA changed from Mar 93 to Jul 93 due to the slip in the technical and user tests. The Milestone III was also changed to an LRIP decision. Block II (HGSM) FSD Award changed from Jan 93 to Sep 93 due to extended preparation and review of the technical specifications and solicitation/proposal. The Block II EMD program has subsequently been deleted. New milestones introduced concurrent with the approval of new APB dated 11 August 1993. MGSM awarded on LRIP basis, actual Contract Award Date shown. HGSM characteristics deleted in accordance with APB revisions.

c. Current Change Explanations --

The following milestones changed from the previous SAR:

	Milestone	From	To	Reason
(Ch-1)	MGSM 1st PD	DEC 95	FEB 96	Slipped due to incorporation of design and modifications into end item
	PQT Start	MAY 95	JUL 95	
	PQT Complete	AUG 95	OCT 95	
(Ch-2)	MGSM Depot	JAN 97	N/A	GSM maintenance concept for depot support was changed to Life Cycle Contractor Support following completion of a logistics cost comparison study
	LGSM Depot	JUN 97	N/A	
	OGS Depot	AUG 98	N/A	
(Ch-3)	MGSM MOTE			Changes due to delays in aircraft software maturity and resulting slip to MOTE
	Start	JUN 95	NOV 95	
	Compl	DEC 95	FEB 96	
	LGSM MOTE			
	Start	JUN 95	NOV 95	
	Compl	DEC 95	FEB 96	
(Ch-4)	LGSM Ms III	JUN 96	N/A	The LGSM program will be awarded as an LRIP contract, these milestones
	LGSM Pd Awd	JUN 96	N/A	
	LGSM Pd Del	JAN 98	N/A	

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Joint STARS GSM, December 31, 1994

9c. Schedule (Cont'd):

are no longer applicable

(Ch-5)	1st LRIP Del	FEB 97	JUN 97	LGSM LRIP delivery and
	LGSM FUE	JUN 97	NOV 97	subsequent milestones
	LGSM Org Spt	JUN 97	Nov 97	delayed based on late LRIP
				award and longer than
				anticipated production
				lead time

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 August 11, 1993.

10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
INTERIM GSM				
Time Compression/ Integration of Data Display (frames MTI data per second)	5	5	/ Level suffic- ient to demon- strate target movement on GSM monitor	5
Target Auto Track/ Prediction (track on tgt file)	16	16	/ 16	16
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	50	50	/ 50	50
Workstations	2	2	/ 2	2
Reliability Mean Time Between Failure (MTBF) (hrs)	150	150	/ 125	155

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Joint STARS GSM, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	71	70	/ 70	77	77
Maintenance					
Mean Time to Repair (MTTR) (min)	30	30	/ 30	13	13
Mean Time to Repair (MTTR) ODS/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
Interoperability	Rec & Trans to both TACFIRE (19) and ASAS (11)	Rec & Trans to TACFIRE (19) and ASAS (11)	/ Rec & Trans to TACFIRE (10) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & (Ch-1) Trans to TACFIRE (7) 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 n	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 (MEDIUM) GSM					

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Joint STARS GSM, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level suffic- ient to demon- strate target movement on GSM monitor	5	5	
Target Auto Track/ Prediction (track on tgt file)	N/A	16	/ 16	16	16	
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	N/A	50	/ 50	50	50	
Workstations	N/A	2	/ 2	2	2	
Reliability						
Mean Time Between Failure (MTBF) (hrs)	N/A	150	/ 125	155	155	
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	N/A	70	/ 70	70	70	
Maintenance						
Mean Time to Repair (MTTR) (min)	N/A	30	/ 30	30	30	(Ch-2)
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 60	60	60	
Max Time to Repair Unit (min)	N/A	60	/ 60	30	N/A	(Ch-3)
Max Time to Repair (DS/GS (hrs)	N/A	3.5	/ 3.5	3.5	N/A	(Ch-3)
Interoperability	N/A	Rec & transmit to TACFIRE (19) and ASAS (11)	/ Rec & transmit to TACFIRE (10) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (7) and ASAS (2)	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Standard IEW Modules	Std HW & SF	Std HW & SW	/ Std HW & SW	Std HW & SW	Std HW & SW	
Payload Weight (lbs)	9500	N/A	/ N/A	N/A	N/A	(Ch-2)
Imagery Storage (hrs on line per 2 hrs video)	8	N/A	/ N/A	N/A	N/A	(Ch-2)
Imagery Storage (hrs)						
Digital Radar	N/A	8	/ 8	8	8	
Video (analog)	N/A	2	/ 2	2	2	
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	Data into existing data process facility	Data into existing data process facility	
Nuclear Survivability	Hardened against EMP	Hardened against EMP	/ Hardened against EMP	Hardened against EMP	Hardened against EMP	
Hard copy data capability	N/A	Color printout of IMINT graphics & text	/ Color printout of IMINT data	Color printout of IMINT data	Color printout of IMINT data	

BLOCK I (HEAVY) GSM

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Joint STARS GSM, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Nuclear Survivability	Hardened against EMP and TREE thermal radia- tion and blast	Hardened against EMP (blast/ thermal protec- tion provided by C2V carrier)	Hardened against EMP (blast/ thermal protec- tion provided by C2V variant	N/A	N/A	(Ch-4)
BLOCK I (LIGHT) GSM Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level suffic- ient to demon- strate target movement on GSM monitor	5	5	
Target Auto Track/ Prediction (track on tgt file)	N/A	16	/ 16	16	16	
Workstations Reliability	N/A	2	/ 2	2	2	
Mean Time Between Failure (MTBF) (hrs)	N/A	150	/ 125	TED	155	
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	N/A	70	/ 70	TED	70	
Maintenance Mean Time to Repair (MTTR) (min)	N/A	30	/ 30	TED	30	
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 60	TED	60	
Max Time to Repair Unit (min)	N/A	60	/ 60	N/A	N/A	(Ch-3)
Max Time to Repair (DS/GS (hrs)	N/A	3.5	/ 3.5	N/A	N/A	(Ch-3)

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Joint STARS GSM, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Interoperability	N/A	Rec & / Rec & transmit transmit to to TACFIRE TACFIRE (19) and (10) and ASAS ASAS (2) (11)	Rec & Trans toboth TACFIRE (7) and ASAS (2)	Rec & (Ch-1) Trans to both TACFIRE (7) and ASAS (2)
Standard IEW Modules	N/A	Std HW & / Std HW & SW SW &HW &HW		
Imagery Storage (hrs)				
Digital Radar	N/A	8 / 8	8	8
Video (analog)	N/A	2 / 2	2	2
Simultaneous Multisensor Operations	N/A	Data / Data from 2 from 2 or more or more sensors sensors	Data from 2 or more sensors	Data from 2 or more sensors
Two Independent Workstations	N/A	Display / Display MTI, MTI, FTI, and FTI, and SAR SAR data data	Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data
Remote Data Display	N/A	Data / Data into into existing existing data data process process facility facility	TED	Data into existing data process facility
Nuclear Survivability	N/A	Hardened / Hardened against against EMP EMP	TED	Hardened against EMP
Hard copy data capability	N/A	Color / Color printout printout of of IMINT IMINT, data graphics & text	TED	Color printout of IMINT data
Transportability	N/A	C-130 / C-130 drive drive on, on, drive drive off off	TED	C-130 drive on, drive off

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Set up/Tear down (w/3 man crew) (min)	N/A	10	/ 15	15	15
Commander's Tactical Terminal (CTT)	N/A	CTT data inter- face	/ CTT data inter- face	TBD	CTT data inter- face
Remote Data Display (m)	N/A	Up to 1000M into an existing data process- ing fac- ility	/ Up to 100M into an existing data process- ing facility	TBD	Up to 1000 into an existing data process- ing facility
Payload weight (each vehicle) (lbs)	N/A	4250	/ 4400	TBD	4400 (Ch-2)
Platforms	N/A	Develop and deploy in Lt, Med, & Hvy configs	/ Develop and deploy in Lt, Med, & Hvy configs	TBD	Develop and deploy in Lt, Med, & Hvy configs

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Joint STARS GSM, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Secondary Data Dissemination	N/A	Provide / Provide second- / second- ary data ary data commun- commun- ication ication via via SATCOM SATCOM and wide and wide area area Coms (eg Coms (eg MSE) to MSE) to distrib- distrib- ute ute JSTARS JSTARS and data other beyond corre- the line lated of sight IEW capabil- common ity data beyond line of sight	TBD	Provide second- ary data commun- ication via SATCOM and wide area Coms (eg MSE) to distrib- ute JSTARS and other corre- lated IEW common data beyond line of sight

b. Previous Change Explanations --

Addition of GSM Approved Acquisition Program Baseline characteristics to SAR reporting. IGSM MTEF, MTBOMF, MITR and Max-TTR have been changed to reflect demonstrated performance. MTEF and MTBOMF changed to reflect demonstrated results achieved during testing of the system. New characteristics were added to reflect approval of revised APB dated 11 August 1993. LGSM MTBOMF changed to 70 hours to correct error in previous SAR.

c. Current Change Explanations --

The following characteristics have changed from the previous SAR:

Characteristic	From	To	Reason
(Ch-1) Interoperability	19 msg	7 msg	Release of TACTIRE version 10 has reduced

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Joint STARS GSM, December 31, 1994

10c. Performance Characteristics (Cont'd):

				the number of prefor- matted messages available for each interface and the objective/threshold were modified accordingly
(Ch-2)	GSM MTR	13 min	30 min	These adjustments were made to correct errors noted in the previous SAR
	HGSM Payld Wt(lb)	10800	N/A	
	HGSM Imagery Stg	8 hrs	N/A	
	LGSW Payld Wt(lb)	2800	4400	
(Ch-3)	HGSM Max Rpr Unit	30 min	N/A	These characteristics were deleted in revised RAM requirements
	HGSM Max Rpr DS/GS	3.5 hr	N/A	
	LGSW Max Rpr Unit	30 min	N/A	
	LGSW Max Rpr DS/GS	3.5 hr	N/A	
(Ch-4)	HGSM Nuclear Surv	Harden	N/A	All estimates for the HGSM have been desig- nated N/A as this system has been deleted from the program requirements

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 August 11, 1993.

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Joint STARS GSM, December 31, 1994

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	452.4	538.4	554.7
Procurement	680.6	767.4	651.9
Recurring Costs	(563.8)		(495.2)
Nonrecurring Costs	(55.6)		(7.8)
Total Flyaway	(619.4)		(503.0)
Other Weapon Systems	(16.2)		(105.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(45.0)		(43.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 89 Base-Year \$	1133.0	1305.8	1206.6
Escalation	158.6	390.0	271.0
Development (RDT&E)	(-4.0)	(59.9)	(27.7)
Procurement	(162.6)	(330.1)	(243.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1291.6	1695.8	1477.6
b. Quantity --			
Development (RDT&E)	15	21	18
Procurement	97	104	104
Total	112	125	122

The procurement quantities noted above include a total of 22 LRIP units (12 Medium GSMs and 10 Light GSMs).

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 August 11, 1993.

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Joint STARS GSM, December 31, 1994

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (AUG 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (FY89\$)	1206.6	1305.8	
(2) Quantity	122	125	
(3) Unit Cost	9.890	10.446	-5.325
b. Procurement			
(1) Cost (FY89\$)	651.9	767.4	
(2) Quantity	104	104	
(3) Unit Cost	6.268	7.379	-15.051

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Joint STARS GSM, December 31, 1994

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	+6.9	+80.2	-	+87.1
Quantity	+28.7	+5.2	-	+33.9
Schedule	-	-0.7	-	-0.7
Engineering	+83.7	-8.7	-	+75.0
Estimating	+52.8	-85.7	-	-32.9
Other	-	-	-	-
Support	-	+131.7	-	+131.7
Subtotal	+172.1	+122.0	-	+294.1
Current Changes:				
Economic	-1.1	-11.8	-	-12.9
Quantity	-13.6	-	-	-13.6
Schedule	-	-4.0	-	-4.0
Engineering	-24.0	-	-	-24.0
Estimating	0.6	-54.5	-	-53.9
Other	-	-	-	-
Support	-	0.3	-	+0.3
Subtotal	-38.1	-70.0	-	-108.1
Total Changes	+134.0	+52.0	-	+186.0
Current Estimate	582.4	895.2	-	1477.6

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Joint STARS GSM, December 31, 1994

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	+19.4	-	+41.9
Schedule	-	+2.7	-	+2.7
Engineering	+68.5	-5.8	-	+62.7
Estimating	+39.6	-89.4	-	-49.8
Other	-	-	-	-
Support	-	+82.4	-	+82.4
Subtotal	+130.6	+9.3	-	+139.9
Current Changes:				
Quantity	-10.4	-	-	-10.4
Schedule	-	-	-	-
Engineering	-18.5	-	-	-18.5
Estimating	0.6	-43.3	-	-42.7
Other	-	-	-	-
Support	-	5.3	-	+5.3
Subtotal	-28.3	-38.0	-	-66.3
Total Changes	+102.3	-28.7	-	+73.6
Current Estimate	554.7	651.9	-	1206.6

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
 Quantity: Increased prototype quantity.
 Engineering: ROC revisions due to Operation Desert Storm lessons learned. Cost adjustments to develop Block II variants. Accelerated Light GSM R&D effort.
 Estimating: Refined and rephased program estimate. Adjustment for current and prior inflation. Revised historical data to reflect actual.

Procurement

Economic: Revised escalation indices.
 Quantity: Quantity increased to 104 GSMS.

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13b. Cost Variance Analysis (Cont'd):

Schedule: Accelerated procurement schedule during FY95-02.
Delay production schedule FY99 and out.

Engineering: Reduced cost from deleting retrofit Block I Heavy variant.

Estimating: Refined program estimate. Adjustment for current and prior inflation. Revised hardware cost based on LRIP contract award.

Support: Initial spares and support equipment changes.
Revised estimate for spares/support requirements.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised inflation indices. (Economic)		-1.1
Adjustment for current/prior inflation. (Estimating)	+0.6	+0.6
Reduction of 3 Block I Heavy prototypes from 4 to 1 due to program termination. (Quantity)	-10.4	-13.6
Reduction of engineering costs due to Block IH GSM termination. (Engineering)	-18.5	-24.0
RDT&E Subtotal	-28.3	-38.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)		-11.8
Adjustment for current/prior inflation. (Estimating)	+0.9	+0.9
Acceleration of production schedule FY96 thru FY99. (Schedule)	--	-4.0
Refined estimate to reflect MSGM LRIP contract costs. (Estimating)	-31.2	-42.3
Adjusted historical data to actual. (Estimating)	-13.0	-13.1
Increased trainer upgrade requirement. (Support)	+5.3	+0.3
Procurement Subtotal	-38.0	-70.0

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
11.532	0.608	-0.779	-0.039	0.418	-0.711	--	1.082	0.579	12.111

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

BLOCK I Light FSD:

MOTOROLA, SCOTTSDALE, AZ

DAAB07-92-C-1001, CPFF

Award: May 29, 1992

Definitized: June 29, 1993

Initial Contract Price

Target	Ceiling	Qty
\$22.5	\$22.5	2

Current Contract Price

Target	Ceiling	Qty
\$100.1	N/A	4

Estimated Price At Completion

Contractor	Program Manager
\$108.1	\$109.4

Previous Cumulative Variances

Cumulative Variances To Date (12/31/94)

Net Change

Cost Variance	Schedule Variance
\$-3.6	\$-4.6
\$-3.2	\$-1.0
\$0.4	\$3.6

Explanation of Change:

Definitization of this contract occurred on 29 June 93. A Letter Contract was awarded in May 92. To date, the Budgeted Cost of Work Performed is \$85.4M. The identified variances equate to -3.9% (cost) and -1.2% (schedule). Although the cumulative variances are negative, significant improvement occurred during the past year as evidenced by the positive net change totals in the table above.

b. Procurement --

Block I Medium LRIP:

Motorola, Scottsdale, AZ

DAAB07-93-C-K258, FFP

Award: September 30, 1993

Definitized: September 30, 1993

Initial Contract Price

Target	Ceiling	Qty
\$55.4	N/A	12

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15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$62.3	N/A	12	\$62.3	\$62.3

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: 60.9% (14 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 48.6% (\$718.2 / \$1477.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY82-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	522.0	18.8	7.9	33.7	582.4
Procurement	196.2	86.7	90.6	521.7	895.2
MILCOM	-	-	-	-	-
O&M	-	-	-	-	-
Total	718.2	105.5	98.5	555.4	1477.6

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16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Esci Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1982				5.1	4.1	4.1	4.1	7.6
1983				43.4	36.5	36.5	36.3	4.0
1984				75.0	65.3	65.3	65.2	3.8
1985				30.8	27.7	27.7	27.5	3.4
1986				43.9	40.6	40.6	40.2	2.8
1987				27.2	25.9	25.9	25.1	2.7
1988				18.9	18.7	18.7	18.2	3.0
1989				22.2	22.9	22.9	21.8	4.2
1990				35.3	37.8	37.8	37.3	4.1
1991				38.8	43.1	43.1	42.3	4.3
1992				59.5	67.8	67.8	67.2	3.0
1993				53.4	62.5	62.5	60.6	2.7
1994				24.5	29.4	29.4	26.3	2.0
1995				32.2	39.7	20.1	9.0	2.7
1996				14.8	18.8			3.0
1997				6.0	7.9			3.0
1998				5.5	7.4			3.0

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Joint STARS GSM, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Years\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pende	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1999				4.5	6.3			3.0
2000				3.5	5.0			3.0
2001				10.2	15.0			3.0
Subtot	18			554.7	582.4	502.4	481.1	

Appropriation: 2035 Other Procurement, Army

1987	3	2.1	9.8	14.9	14.7	14.7	14.6	2.7
1988	6		16.9	21.3	21.9	21.9	21.7	3.0
1989				2.2	2.4	2.4	2.4	4.2
1990								4.1
1991								4.3
1992								3.0
1993	5	1.0	22.5	29.0	34.9	34.4	11.8	2.7
1994	7	0.2	33.8	51.9	64.0	62.4	21.5	2.0
1995	8	1.7	39.5	45.7	58.3	1.0	0.2	2.7
1996	12	2.3	58.6	66.6	86.7			3.0
1997	12		57.9	67.6	90.6			3.0
1998	12	0.5	57.5	68.8	95.0			3.0

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Joint STARS GSM, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Years\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1999	10		50.7	65.7	93.4			3.0
2000	10		48.5	66.9	97.9			3.0
2001	7		33.3	61.7	93.0			3.0
2002	6		28.7	40.1	62.8			3.0
2003	6		28.7	40.7	65.1			3.0
2004			8.8	8.8	14.5			3.0
Subtot	104	7.8	495.2	651.9	895.2	136.8	72.2	
Grand Total	122	7.8	495.2	1206.6	1477.6	639.2	553.3	

Recurring costs in FY04 are refurbishment costs for 12 MGSM (FY93,94) and 10 LGSM (FY95,96(2)). These costs are to upgrade the GSMs to the Common Ground Station (CGS) capability and involves adding sensor interfaces, boards, black boxes, racks & cables etc..

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RDTE
Procurement

To Date
18/18
9/9

b. Approved Design-to-Cost Objective -- N/A.

A Design-to-Cost waiver was obtained from HQDA in June 1992 for this program and is therefore not applicable.

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Joint STARS GSM, December 31, 1994

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 1995 Joint STARS (Army) Baseline Cost Estimate. There are no antecedent systems.

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost GSM	N/A
Personnel	253.0	N/A
Unit Consumption	139.0	N/A
Other Sustainment	25.0	N/A
Total	417.0	N/A

c. Contractor Support Costs -- None.

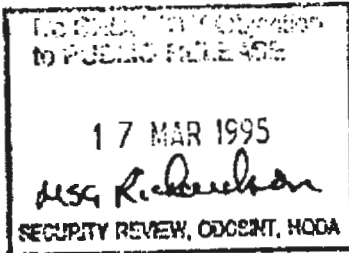
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A-3 AFATDS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: AFATDS

AS OF DATE: December 31, 1994



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1. Designation and Nomenclature (Preferred Name):

Advanced Field Artillery Tactical Data System (AFATDS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-CC-PS

Ft Monmouth, NJ 07703-5404

AV 995-3090 COMM 908-544-3090

COL Steven W. Boutelle

Assigned: August 13, 1992

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23726 Project D322, D2ET

PROCUREMENT:

APPN 0350 ICN MIPR (NGRE)

APPN 2035 ICN B28600 (Army)

APPN 2035 ICN B78400 (Army)

APPN 2035 ICN BA9708 (Army)

APPN 2035 ICN MA9708 (Army)

APPN 2035 ICN B78100 (Army)

APPN 2035 ICN BA9726 (Army) (Shared)

APPN 2035 ICN BS9708 (Army)

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DIRECTORATE FOR FREEDOM OF INFORMATION:
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs:

ATCCS Common Hardware/Software (CHS), Standard Integrated Command
Post System (SICPS)

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AFATDS, December 31, 1994

6. Mission and Description:

The Advanced Field Artillery Tactical Data System (AFATDS) is a digital, integrated battlefield management and decision support 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) utilizing the Common Operating Environment (COE) architecture. AFATDS utilizes evolving commercial computer technology of the ATCCS Common Hardware/Software (CHS) procurement.

Based on the organizational structure to be supported, AFATDS hardware items will include the following: Fire Support Control Terminals (FSCT), Lightweight Computer Units (LCU), Tactical Communications Interface Module, Printers, Tactical Display Devices, and installation kits tailored to the Force Structure and available vehicles. This will all be ATCCS Common Hardware.

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 is 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).

Responsiveness, 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.

Fire Support Ada Conversion (FSAC) and Initial Fire Support Automated System (IFSAS) are associated programs that are included in the AFATDS Acquisition Program Baseline (APB).

FSAC will provide an accelerated fielding of ATCCS Common Hardware (CH) until the AFATDS software becomes available. FSAC will convert the existing Battery Computer System (BCS) technical fire control software to Ada and replace the existing BCS hardware with the Lightweight Computer Unit (LCU). These LCUs will ultimately be utilized as a host for the AFATDS software.

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AFATDS, December 31, 1994

6. Mission and Description (Cont'd):

IFSAS will replace the Variable Format Message Entry Device (VFMED) and Battalion TACFIRE and provide the National Guard with an initial automated capability. IFSAS will replace the TACFIRE equipment with the LCU based AN/GYK-37(V)1 hardware with Lightweight TACFIRE (LTACFIRE) software ported to the LCU. Like FSAC, IFSAS reflects an accelerated fielding of the ATCCS CHS until AFATDS software becomes available. IFSAS is also being fielded by the Marine Corps under a separate program.

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 with MIL-STD 2167A. During 1991, the contractor identified design requirements and initiated detailed design. The AFATDS Version 2.0 development effort was begun in Oct 92.

A revised APB for the AFATDS program was signed on 4 Oct 92.

During 1993, the initial AFATDS Version 1 was completed. Formal Qualification Test (FQT) and the System Integration Test (SIT) and regression portion of the FQT were completed in Nov 93.

AFATDS Force Development Test and Experimentation I (FDTE) was conducted from 7 - 26 Feb 94. The FDTE enabled the Project Manager (PM) to completely test out the AFATDS software with the CHS within the context of the SICPS using tactical communications and doctrine. The FDTE demonstrated that the present system (hardware and software) would not meet the performance requirements prescribed by the AFATDS user. The PM ordered Reduced Instruction Set Computers (RISC) for use during the Initial Operational Test and Evaluation (IOTE) to enable AFATDS to meet Version 1 performance requirements. The software functionality for IOTE was completed in June 94.

A General Officer conference call was held on 11 Mar 94 to discuss the IOTE schedule. Based on the PM's analysis of the software development contractor's ability to correct the deficiencies demonstrated at FDTE, the correction of known software faults and the additional functionality required for IOTE, the AFATDS IOTE was

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AFATDS, December 31, 1994

7a. Program Highlights (Cont'd):

delayed from July 94 to July 95.

AFATDS successfully participated in a number of other tests conducted over the summer of 1994, using revised software and RISC hardware. AFATDS participated in the Enhanced Position Location Reporting System (EPLRS) IOTE in Aug 94. In Aug, AFATDS also participated in the ATCCS III Integrated Interoperability Demonstration (IID) at Ft Hood, Texas. During the IID, AFATDS successfully demonstrated the horizontal interchange of messages with the other four battlefield functional systems: Maneuver Control System (MCS), Forward Area Air Defense Command and Control System Force Operations, All Source Analysis System Collateral Workstation (ASAS-CW) and the Combat Service Support Control System. The highlight of the exercise was the rapid exchange of the Target Intelligence Data Message between the AFATDS and the ASAS-CW demonstrating AFATDS' ability to support deep battle operations. Concurrent with the IID, the 1st Cavalry Division DIVARTY conducted an AFATDS Early User Experiment (EUE) and demonstrated mission processing requirements and actually ran 175 missions in an hour, which is beyond the Version 1 requirement of 120 missions per hour. Also the Fire Support Automated Test System (FSATS) demonstrated its ability to successfully capture and process VMF message formats during the EUE.

Version 2 startup was slow, as contractor resources were dedicated to completion of Version 1. The System Requirements Review was held at Ft Sill in Nov 93 and the System Segment Specification (SSS) approved in Dec 93. However, to ensure that the AFATDS software contractor concentrated all its efforts on completion of the Version 1, a Stop Work Order for AFATDS Version 2 was issued by the Procuring Contracting Officer effective 1 Apr 94.

Due to the delay in the operational testing of the Version 1 AFATDS, previous delays in Version 2 and projected delays on Version 2 caused by the Stop Work Order, the PM notified the Army Acquisition Executive (AAE) of a schedule breach to the AFATDS APB. In addition, as a result of the change to a Hewlett Packard (HP) 735 RISC hardware baseline, loss of quantity discounts and increased hardware quantity, a procurement cost breach was also reported. RDTE costs breached the APB threshold due to growth on the Version 1 contract and additional management costs resulting from the extended development schedule. An Enhanced Program Management Stability Panel was convened in May 94 to review the AFATDS program in response to the cost and schedule breaches. The panel determined that the corrective actions being taken by the PM and PEO were the correct ones. The revised APB was approved in Oct 94.

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7a. Program Highlights (Cont'd):

The Fire Support Ada Conversion (FSAC) program was officially approved by the AAE in Mar 91. FSAC completed the Preliminary Design Review (PDR) in Mar 91, the Critical Design Review (CDR) in June, and the Formal Qualification Test (FQT) in Sep 91. An Initial Operational Test and Evaluation (IOTE) on the AN/GYK-37 Fire Control System was conducted in Mar 92. FSAC received type classification of the LCU based AN/GYK-37 and production approval in Aug 92. In Nov 92, a conditional materiel 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 was in 1Q93 to the National Guard in South Dakota.

The Fire Direction System (FDS) Ada V10 IOTE was successfully held in Mar 93 followed immediately by the FDS V10 FUE. The Battery Computer System Ada V10 IOTE was completed in Dec 93.

In Jun 91, 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 is managed concurrently with the active BCS Ada rehost program.

IFSAS was initiated in Aug 91 as an Operation and Support Cost Reduction (OSCR). It was approved as a production level program and funded in FY92. A Memorandum of Agreement (MOA) between the National Guard, PM FATDS and PEO CCS was signed in Aug 92 for procurement of IFSAS to be fielded to the National Guard using Dedicated Procurement Program funds. The National Guard IFSAS is managed concurrently with the active IFSAS.

IFSAS proceeded with the port of the LTACFIRE software to the LCU in FY93 and the Package 10 IOTE was successfully completed in May 93. Approval to procure the system was given at the Milestone III IPR held in Jul 93. The IFSAS FUE was to the National Guard in Aug 93.

b. Significant Developments Since Last Report --
In Dec 94, the AFATDS Version 1 software was delivered by the contractor for the start of Technical Testing. The Formal Qualification Test (FQT) was completed, ahead of schedule, on 14 Dec 94. The first Test Data Review Board was conducted 15 Dec 94 and identified no Priority 1 Software Test Reports (STR), 10 Priority 2 STRs, and 27 Priority 3-5 STRs. The SIT began, ahead of schedule, on 15 Dec 94.

AFATDS participated in the V Corps Atlantic Resolve Exercise in Nov 94. During Atlantic Resolve, AFATDS was used in the V Corps

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7b. Program Highlights (Cont'd):

Artillery Deep Operations Complex for Aviation Route planning and coordination for the Theater Missile Defense (TMD) Army Tactical Missile System (ATCMS) missions.

In Oct 94, the AAE delegated the decision to restart the AFATDS Version 2.0 software development effort to the Program Executive Officer, Command and Control System (PEO CCS). Based on the improvement in contractor performance and the stability of the Version 1 software, the PEO CCS and PM FATDS decided to restart the effort. The Procuring Contracting Officer officially notified Magnavox on 2 Nov 94 of the rescission of the Stop Work Order.

A revised APB, reflecting the revised program schedule, the cost impact of changing to a RISC hardware baseline and the cost impact of growth in the Version 1 and 2.0 development contract costs, was signed by the AAE on 4 Oct 94.

In Dec 94, DSCOPS, TRADOC System Manager (TSM) and PM representatives agreed to replace the FSCT in the platoon fire direction center (FDC) with an LCU. In addition, a second LCU would be put in the FDC to support the BCS function and provide a system backup capability. This results in a requirement for 2 LCUs in the objective system vice a single FSCT, for a total quantity increase of 783 computers.

The FSAC and IFSAS programs continued procurement and fielding of hardware as scheduled.

AFATDS is expected to satisfy the mission requirements.

c. Changes Since As Of Date -- None

8. Threshold Breaches:

There are currently no breaches to the approved Acquisition Program Baseline (APB), 4 Oct 94, and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Software Formal Qualification Test Complete	JAN 89	JAN 89	JAN 89
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
Version 2 SW Development Begin	MAY 92	MAY 92	OCT 92
CHS Hardware Order (AFATDS Training Base)	NOV 92	OCT 93	JAN 94
V3 Acquisition Alternative Selection	DEC 92	DEC 92	JUN 93
System Software Test V1	MAY 93	MAY 93	NOV 93
CHS Hardware Delivery (AFATDS Training Base)	JUN 93	APR 94	JUN 94
Force Development Test and Experimentation (FDT&E) -- Complete	JUL 93	OCT 93	FEB 94
First Unit Equipped (FUE) V1	SEP 93	AUG 95	AUG 95
Preliminary Design Review V2 (Start)	NOV 93	N/A	N/A
System design Review V2.0	N/A	JAN 95	JAN 95
IOTE:			
Begin	JAN 94	JUL 95	JUL 95
Complete	FEB 94	AUG 95	AUG 95
ASARC -- Milestone III	APR 94	NOV 95	NOV 95
C3I Committee Review	N/A	NOV 95	NOV 95
CDR V2 (Start)	JUN 94	N/A	N/A
Version 3 SW Development -- Begin	NOV 94	JUL 97	JUL 97
System Software Test V2	JAN 95	N/A	N/A
System Design Review V2.1	N/A	JAN 96	JAN 96
Initial Operational Capability (V1)	JAN 95	JUL 96	JUL 96
System Software Test V2.0	N/A	FEB 97	FEB 97
Operational Test V2.0 (Start)	N/A	AUG 97	AUG 97
System Software Test V2.1	N/A	FEB 98	FEB 98
Operation Test V2.1	N/A	AUG 98	AUG 98
FDTE V2	MAR 95	N/A	N/A

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
FUE V2	MAY 95	N/A	N/A
FOTE V2:			
Begin	MAY 95	N/A	N/A
Complete	JUL 95	N/A	N/A
Fielding Total Force -- Start (V2)	SEP 95	N/A	N/A
Fielding Total Force - Start (V1)	N/A	JUL 96	JUL 96

b. Previous Change Explanations --

The CHS Hardware Order changed from Nov 92 to Oct 93, and the CHS Hardware Delivery changed from Jun 93 to Apr 94 due to the elimination of FY93 Procurement funds. The milestones slipped again to Jan/Jun 94, respectively, due to the late release of funds.

FDTE Complete was rescheduled from Jul 93 to Feb 94. IOTE Begin and Complete moved from Jan 94 to Jul 95 and Feb 94 to Aug 95, respectively. The ASARC Milestone III moved from Apr 94 to Nov 95. Based on the contract negotiations for AFATDS V1, the FDTE test window was Jun/Jul 93. After 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. The test windows were May/June and Sept/Oct. The AFATDS V1 schedule precluded participation in the May/June 93 test window. As such, the AFATDS V1 FDT&E was moved to the Sept/Oct 93 test window. However, agreements at the AFATDS Operational Test Readiness Review, held Aug 93 at Ft Sill, moved the FDTE start date from Oct 93 to Jan 94 to allow time to develop quality training for FDTE test personnel. Further schedule adjustments were made to correct deficiencies in the FDTE. Current estimates for FUE IOTE, ASARC, IOC, C3I Committee Review, IOC V1 and Fielding Total Force were adjusted accordingly.

The First Unit Equipped V1 moved from Sep 93 to Aug 95. FUE for Version 1 was originally scheduled for Sep 93 to coincide with the completion of FDTE (DCSOPS guidance). FUE is now scheduled to coincide with the last month of the system testing, i.e., IOTE V1 (Aug 95) and is consistent across all BFA's.

The Initial Operational Capability V1 moved from Jan 95 to Jul 96. The prior IOC was based on refurbishment of test units and planned for Jan 95. The IOC changed based on the first production unit fielded after M/S III, scheduled for Jul 96.

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9b. Schedule (Cont'd):

The Version 1 development effort was delayed due to unexpected complexity in the software design. Version 1 milestones were adjusted as follows: Critical Design Review (CDR) V1 occurred in Jun 92 vice May 92 and System Software Test (SST) V1 occurred in Nov 93 vice May 93.

The development strategy for Version 2 was changed to expedite software upgrades and to provide more timely improvements to the field. This change resulted in Version 2 being developed in two separate packages: Version 2.0 and Version 2.1. Accordingly, several Version 2 milestones have been deleted from the APB: Preliminary Design Review (Jun 94), Critical Design Review (Jan 95), System Software Test (Sep 95), Force Development Test and Experimentation (Jan 96) and First Unit Equipped (Jun 96). Additionally, several milestones have been added to the baseline to detail the Version 2.0 and Version 2.1: Version 2.0 System Design Review (Jan 95), Version 2.0 System Software Test (Feb 97), Version 2.0 Operational Test (Aug 97), Version 2.1 System Design Review (Jan 96) Version 2.1 System Software Test (Feb 98) and Version 2.1 Operational Test (Aug 98).

The V3 Acquisition Alternative Selection changed from Dec 92 to Apr 93 to allow for Government review of the quality of Version 1 software prior to determining the V3 acquisition strategy. The milestone was actually accomplished in Jun 93.

Version 3 Software Development - Begin changed from Nov 94 to Jul 97 because of delays in Version 1 completion which also delayed subsequent versions of the software development.

c. Current Change Explanations -- None

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program:

AAE Approved Acquisition Program Baseline dated October 04, 1994.

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10. Performance Characteristics:

a. Performance --		Approved Program		Demonstrated	Current
	DE	Objective/Threshold		Perf	Estimate
TECHNICAL					
MTBF-Hardware (hrs)				N/A	N/A
Fire Support Control Terminal (FSCT)	636	N/A	/ N/A	N/A	N/A
Fire Support Terminal (FST)	1000	N/A	/ N/A	N/A	N/A
MTTR-System - Unit Level (min)					
FSCT	20	N/A	/ N/A	N/A	N/A
FST	20	N/A	/ N/A	N/A	N/A
MIPS (Million Instructions per sec)					
FSCT	12	N/A	/ N/A	N/A	N/A
FST	12	N/A	/ N/A	N/A	N/A
Internal Memory (Megabytes)					
FSCT	16	N/A	/ N/A	N/A	N/A
FST	16	N/A	/ N/A	N/A	N/A
System Ao- (Wartime) (Operating 24 hrs/day for 108 hours)					
Version 1	.90	.90	/ N/A	TBD	.90
Version 2	.90	.90	/ N/A	TBD	.90
Version 3	.90	.90	/ N/A	TBD	.90
Fire Mission Processing Peak Load (Fire Missions/hr)					
Version 1	247	247	/ N/A	338	247
Version 2	513	513	/ N/A	TBD	513
Version 3	780	780	/ N/A	TBD	780
Fire Mission Processing Speed (secs)					
Version 1	14.5	N/A	/ N/A	N/A	N/A
Version 2	7.0	N/A	/ N/A	N/A	N/A
Version 3	4.6	N/A	/ N/A	N/A	N/A
Power Requirements (KW)					
FSCT	1.4	N/A	/ N/A	N/A	N/A
FST	0.8	N/A	/ N/A	N/A	N/A
Sustainment of Operation During Power Loss (min)	5	5	/ N/A	TBD	5
Emergency Purge (min)	2	2	/ N/A	TBD	2

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Set-up/Tear-down (min)	10	10	/ N/A	TBD	10
Weight in Pounds (Less Radios)					
FSCT	400	N/A	/ N/A	N/A	N/A
FST	243	N/A	/ N/A	N/A	N/A
Operating Temperature (deg F)	0-120	0-120	/ N/A	TBD	0-120
Process Combat Information Message (per hour)					
Version 1	N/A	323	/ 157	226	323
Version 2	N/A	650	/ 526	TBD	650
Version 3	N/A	970	/ 895	TBD	970
Develop Orders to Fire (per hour)					
Version 1	N/A	359	/ 168	386	359
Version 2	N/A	723	/ 580	TBD	723
Version 3	N/A	1078	/ 995	TBD	1078
Establish and Update Battlefield Geometry (min)					
Version 1	N/A	1	/ 2	1	1
Version 2	N/A	1	/ 2	TBD	1
Version 3	N/A	1	/ 2	TBD	1
Change Attack Guidance (min)					
Version 1	N/A	2	/ 3	1	2
Version 2	N/A	2	/ 3	TBD	2
Version 3	N/A	2	/ 3	TBD	2
Coordinate Movement Request with Maneuver (min)					
Version 1	N/A	4.6	/ 5	1	4.6
Version 2	N/A	3.8	/ 5	TBD	3.8
Version 3	N/A	3	/ 4	TBD	3
Prepare Quick Fire Plan (min)					
Version 1	N/A	10	/ 15	5	10
Version 2	N/A	10	/ 15	TBD	10
Version 3	N/A	10	/ 15	TBD	10

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Process Field					
Artillery Sensor					
Tasking Order (min)					
Version 1	N/A	4	/ 6	1	4
Version 2	N/A	2	/ 3	TBD	2
Version 3	N/A	1.3	/ 1.5	TBD	1.3
Process Fire Support					
Coordination Measure					
(FSCM) (min)					
Version 1	N/A	2	/ 3	1	2
Version 2	N/A	2	/ 3	TBD	2
Version 3	N/A	2	/ 3	TBD	2

The Demonstrated values shown reflect the performance obtained in the AFATDS Technical Test conducted 9-13 Jan 95. The Current Estimate will be updated after operational test, Sept 1995.

b. Previous Change Explanations --

Hardware related parameters such as MTBF, MTTR, MIPS, power and weight were deleted in the Oct 92 APB as they reflect performance characteristics of the ATCCS Common Hardware Software.

System specific software parameters were added in the Oct 92 APB to reflect the technical characteristics of the AFATDS functional software as identified in program requirements documentation.

c. Current Change Explanations -- None

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program:

AAE Approved Acquisition Program Baseline dated October 04, 1994.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development	Approved	Current
a. Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	390.7	451.5	461.0
Procurement	469.7	453.7	451.4
Flyaway	(339.4)		(342.9)
Other Weapon System	(87.2)		(79.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.1)		(28.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	860.4	905.2	912.4
Escalation	191.7	218.3	224.6
Development (RDT&E)	(31.6)	(45.7)	(58.6)
Procurement	(160.1)	(172.6)	(166.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1052.1	1123.5	1137.0
b. Quantity --			
Development (RDT&E)	137	142	142
Procurement	<u>3184</u>	<u>4743</u>	<u>5414</u>
Total	3321	4885	5556

Note: Excludes 142 RDTE prototypes from the SAR Baseline and 142 from the Current Estimate that are not considered fully configured.

The AFATDS Unit of Measure is computer terminals, which includes both the Fire Support Control Terminals (FSCT) and Lightweight Computer Terminals (LCU). Procurement quantities reflect 1652 Fire Support Control Terminals and 3762 Lightweight Computer Units. Quantities do not reflect peripheral equipment associated with the AFATDS system.

c. Foreign Military Sales/International Cooperative Programs -- Under two separate FMS agreements with the FSAC program, the Fire Direction System (FDS) of the Multiple Launch Rocket System (MLRS) was procured by Turkey, Israel and Greece. The agreements provided for modification to the software, procurement of a total of 18 LCUs and interface kits, and associated fielding and training support. The total value of the agreements is \$830,874.

In addition, discussions are in process with Taiwan and Thailand for purchase of the AFATDS system. Demonstrations of the software for both countries are scheduled in FY95.

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11d. Total Program Cost and Quantity (Cont'd):

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 October 04, 1994.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY90\$)	912.4	905.2	
(2) Quantity	5556	4885	
(3) Unit Cost	0.164	0.185	-11.378
b. Procurement			
(1) Cost (BY90\$)	451.4	453.7	
(2) Quantity	5414	4743	
(3) Unit Cost	0.083	0.096	-12.838

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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	-5.6	-2.8	-	-8.4
Quantity	-	+183.4	-	+183.4
Schedule	+0.3	+6.0	-	+6.3
Engineering	-	-	-	-
Estimating	+2.4	-212.4	-	-210.0
Other	-	-	-	-
Support	-	-73.7	-	-73.7
Subtotal	-2.9	-99.5	-	-102.4
Current Changes:				
Economic	-0.4	-4.2	-	-4.6
Quantity	-	-21.6	-	-21.6
Schedule	8.2	13.1	-	+21.3
Engineering	-	-	-	-
Estimating	92.4	46.3	-	+138.7
Other	-	-	-	-
Support	-	53.5	-	+53.5
Subtotal	+100.2	+87.1	-	+187.3
Total Changes	+97.3	-12.4	-	+84.9
Current Estimate	519.6	617.4	-	1137.0

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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	-	+140.4	-	+140.4
Schedule	-3.7	-	-	-3.7
Engineering	-	-	-	-
Estimating	+4.7	-156.0	-	-151.3
Other	-	-	-	-
Support	-	-57.0	-	-57.0
Subtotal	+1.0	-72.6	-	-71.6
Current Changes:				
Quantity	-	-15.0	-	-15.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	69.3	33.6	-	+102.9
Other	-	-	-	-
Support	-	35.2	-	+35.2
Subtotal	+69.3	+53.8	-	+123.1
Total Changes	+70.3	-18.8	-	+51.5
Current Estimate	461.0	450.9	-	911.9

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices; Economic Adjustment for Negative Program Change.
 Schedule: Revised schedule due to funding profile changes.
 Estimating: Adjustment for Current and Prior Inflation; Additional funding to continue program in FY98 and FY99; Additional funds for software development; Additional funds for OPTEC IOTE; Decreased engineering and management support requirements.

Procurement

Economic: Revised escalation indices; Economic Adjustment for Negative Program Change.

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13b. Cost Variance Analysis (Cont'd):

Quantity: Quantity increase from 3184 to 4631 due to additional deployment requirement; change in force structure; additional training base requirements.

Schedule: Revised schedule due to funding revisions.

Estimating: Adjustment for Current and Prior Inflation; contractual cost reduction due to revised pricing methodology, changes in CHS nonrecurring cost guidance; increased project management and software cost associated with IFSAS.

Support: Changes due to reprogrammed funding for Total Package Fielding costs; Decrease in support cost per revised CHS pricing guidance; Adjustment for Current and Prior Inflation.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Revised schedule due to funding profile change (Schedule)	--	+8.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.3
Increased software development cost due to Version 1 contract cost growth and revised requirements for subsequent versions. (Estimating)	+46.6	+61.1
Additional management cost for extended schedule (Estimating)	+12.4	+18.5
Additional cost of IOTE, FSATS (Estimating)	+5.0	+6.0
Additional OPTEC test support (D2ET) (Estimating)	+5.0	+6.5
RDT&E Subtotal	+69.3	+100.2
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-4.9
Economic Adjustment for Negative Program Change (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation (Economic)	+0.5	+0.5
Total Variance associated with increase of 783 units from 4631 to 5414.	-4.8	-8.5

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease of National Guard LCU quantities from 917 to 851 due to recategorization of assets as spares. (Quantity)	-1.4	-1.6
Decrease of 620 FSCT from 2272 to 1652 due to change in employment concept (Quantity)	-49.0	-72.0
Increase of 1469 LCU from 1442 to 2911 due to changes in employment concept (Quantity)	+35.4	+52.0
Allocation to Estimating Variance resulting from quantity change (Estimating)	+10.2	+13.1
Change in annual procurement profile due to funding adjustments. (Schedule)	--	+13.1
Additional program management costs resulting from schedule adjustments. (Estimating)	+10.0	+17.0
Increase in recurring costs due to changes in hardware cost methodology. (Estimating)	+13.4	+16.2
Increase in National Guard Initial Spares requirement. (Support)	+1.7	+1.9
Increase in support costs due to changes in fielding and training methodology, increased cost of spares. (Support)	+33.5	+51.6
Procurement Subtotal	<u>+54.3</u>	<u>+87.1</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC	Changes								PAUC
(Initial Est)	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	(Current Est)
0.317	-0.002	-0.098	0.005	--	-0.013	--	-0.004	-0.112	0.205

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15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

AFATDS V1:

Magnavox Government, Fort Wayne, IN	Initial Contract Price		
DAAB07-90-C-E708, CPAF/FP	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Award: April 27, 1990	\$60.5	\$0.0	1
Definitized: April 27, 1990			

Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$80.9	\$0.0	\$114.6	\$120.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-19.2	\$0.0
Cumulative Variances To Date (12/31/94)	<u>\$-24.4</u>	<u>\$-0.3</u>
Net Change	\$-5.2	\$-0.3

Explanation of Change: None.

The Version 1 effort is more than 90% complete at this time. Although it was reported in the last SAR that it would be the last report submitted for this contract, because of the continuing cost growth and schedule delays, it is included in this report.

The current contract price has increased with the addition of scope of work through contract modifications. These additional efforts include a port to RISC computer, Class of Interface Changes and Embedded Training/Individual Training. The Contract Budget Base has not exceeded the Contract Cost Baseline.

The contract shows a schedule and cost variance due to the complexity of design for the system. Previous variances reflected the additional development effort required to overcome the unexpected complexity in the software design. The increase in variances over FY94 reflects unplanned effort to resolve deficiencies found during testing.

The contract was replanned in Apr 94. The contractor set the Budgeted Cost of Work Scheduled equal to the Budgeted Cost of Work Performed, thus eliminating schedule variance. The contractor then laid in a new plan with an estimate to complete the work remaining. An additional contractor conducted Estimate to Complete was performed in July. This was used as the basis for an Internal Operating Budget (IOB) by which the program will be managed to its completion.

The current Latest Revised Estimate (LRE) is based on the cost for the contractor to continue to provide support, fix software deficiencies and optimize software through the completion of IOTE in

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15. Contract Information (Cont'd):
Aug 95.

AFATDS V2:			Initial Contract Price		
Magnavox Ele. Sys. Co, Ft Wayne, IN	Target	Ceiling	Qty		
DAAB07-90-C-E708, Mix	\$47.4	\$0.0	1		
Award: October 28, 1992					
Definitized: October 28, 1992					

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$47.4	\$0.0	1	\$47.8	\$47.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.6	\$-0.6
Cumulative Variances To Date (12/31/94)	\$0.0	\$0.0
Net Change	\$0.6	\$0.6

Explanation of Change:

The Version 2 resorted in Nov 94. The Cost and schedule variances are not significant.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 57.7% (15 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 43.3% (\$491.8 / \$1137.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY81-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2006)	<u>Total</u>
RDT&E	346.7	39.4	38.8	94.7	519.6
Procurement	145.1	34.1	38.3	399.9	617.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	491.8	73.5	77.1	494.6	1137.0

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AFATDS, December 31, 1994

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	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	4.0
1984				18.3	15.3	15.3	15.3	3.8
1985				27.3	23.6	23.6	23.6	3.4
1986				18.6	16.5	16.5	16.5	2.8
1987				7.9	7.2	7.2	7.2	2.7
1988				11.6	11.1	11.1	11.1	3.0
1989				17.3	17.1	17.1	17.1	4.2
1990				27.9	28.7	28.7	28.7	4.1
1991				37.5	40.1	40.1	40.1	4.3
1992				44.8	49.1	49.1	49.1	3.0
1993				35.9	40.3	40.3	40.3	2.7
1994				37.5	43.2	43.2	34.5	2.0
1995				40.6	48.1	28.7	2.4	2.7
1996				32.3	39.4			3.0
1997				30.8	38.8			3.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1998				5.6	7.3			3.0
1999				3.5	4.7			3.0
2000				2.5	3.5			3.0
2001				2.5	3.5			3.0
2002				17.1	25.0			3.0
2003				17.1	25.7			3.0
2004				16.2	25.0			3.0
Subtot	142			461.0	519.6	327.3	292.3	

Appropriation: 2035 Other Procurement, Army

1988		8.8		8.9	8.8	8.8	8.8	3.0
1989								4.2
1990								4.1
1991								4.3
1992	331	3.9	10.3	15.1	17.0	17.0	16.5	3.0
1993	131	2.5	5.8	10.5	12.2	12.2	11.7	2.7
1994	771	8.6	22.4	39.6	46.9	39.9	20.9	2.0
1995	200	3.5	11.0	17.9	21.9	8.7	1.1	2.7

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AFATDS, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1996	351	2.0	19.2	27.3	34.1			3.0
1997	258	2.2	18.8	29.8	38.3			3.0
1998	277	4.1	19.3	31.1	41.3			3.0
1999	263	4.1	19.4	31.7	43.3			3.0
2000	247	5.6	16.9	32.4	45.6			3.0
2001	382	5.6	18.0	31.6	45.8			3.0
2002	253	5.6	17.7	31.7	47.3			3.0
2003	245	5.6	17.7	31.0	47.7			3.0
2004	382	5.6	16.8	30.4	48.1			3.0
2005	277	5.6	14.1	27.4	44.7			3.0
2006	195	5.6	9.1	21.5	36.1			3.0
Subtot	4563	78.9	236.5	417.9	579.1	86.6	59.0	
Army	4705	78.9	236.5	878.9	1098.7	413.9	351.3	

Appropriation: 0350 National Guard & Reserve Equipm, Defense

1992	498	3.1	12.8	18.3	20.6	20.6		3.0
1993	353	1.7	8.6	11.0	12.7	12.7		2.7
1994		1.3		4.2	5.0	5.0		2.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 0350 National Guard & Reserve Equipm, Defense (Cont'd)

Subtot	851	6.1	21.4	33.5	38.3	38.3		
DoD	851	6.1	21.4	33.5	38.3	38.3		
Grand Total	5556	85.0	257.9	912.4	1137.0	452.2	351.3	

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

	<u>To Date</u>
RD&E	137/137
Procurement	1323/1217

b. 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 hrs/yr. The costs are based on an operating life of 20 years, with a reprourement of the CHS hardware after 10 years. The CHS will be contractor maintained above the unit level. Costs are from the AFATDS Program Office Estimate, July 1994. Military personnel costs are based on the AFATDS Manpower Estimate Report (MER), Jun 1991. Costs are shown per division.

The AFATDS will replace the TACFIRE/LTACFIRE systems and associated Fire Support hardware. The costs shown were provided by the Field Artillery School (USAFAS), Ft Sill, and reflect TACFIRE support costs only.

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AFATDS, December 31, 1994

18b. Operating and Support Costs (Cont'd):

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	11.1	15.6
Other	2.5	15.3
Total	13.6	30.9

**c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)**

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Eng/Tech Services	0.3	---	---	---	0.3
Total	0.3	---	---	---	0.3

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: AV-8B Remanufacture

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
Cover Sheet Information		1
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Program Acquisition Unit Cost History		9
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Production Rate Data		11
Operating and Support Costs		12

- (U) Designation and Nomenclature (Preferred Name):
AV-8B/Attack, V/STOL, Close Air Support (Harrier II+ Remanufacture)
- (U) DoD Component: Navy
- (U) Responsible Office and Telephone Number:
1411 Jefferson Davis Highway COL Richard Priest
Arlington, VA 22243-5120 Assigned: February 15, 1991
AV 664-2238 X7134
COMM (703) 604-2238 X7134

COL Richard Priest was replaced by COL Judson Mason on
21 February 1995.

- (U) Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 1506 ICN 0124 (Navy)

No Security Objection to Open Publication.

(AS AMENDED)

95-C-0327

MAR 27 1995

Jim J. Anderson

Office of the Chief of

Naval Operations Dept. of the Navy

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~~Declassify on: OADR~~
~~Downgrade: [redacted]~~

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DEPARTMENT OF DEFENSE

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AV-8B Remanufacture, December 31, 1994

5. (U) Related Programs:
None.

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 AV-8B Remanufacture program converts older AV-8B aircraft to the most recent production configuration. The process requires disassembly of the aircraft; modification of selected subsystems and components; and reassembly of selected original, modified, and new production subsystem and parts. Production processes and tooling are used to fabricate new subsystems, parts and components as well as to assemble the aircraft.

AV-8B Remanufacture is an Acquisition Category IC program managed by the A/V Weapon Systems Program Manager, PMA-257, who is also responsible for the ACAT IC AV-8B Harrier II+ production program. Because the remanufactured aircraft reflect the present production aircraft configuration, they satisfy existing Operational Requirements (OR) 025-05-85 of 19 September 1984 (Night Attack) and OR 224-05-89 of 08 August 1988 (Radar). Remanufacture provides the Marine Corps with increased quantities of aircraft capable of effective night fighting operations at a reduced cost by reusing major components of the day attack fleet aircraft.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
This is the initial SAR for the AV-8B Remanufacture program.

b. (U) Significant Developments Since Last Report --
The AV-8B Remanufacture program is expected to meet all mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the Acquisition Program Baseline Agreement dated 30 June 1994. There are no Numm McCurdy unit cost breaches.

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AV-8B Remanufacture, December 31, 1994

9. (U) Schedule:

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
Milestone IV/III Review	JAN 94	JAN 94	MAR 94
Contract Award	FEB 94	FEB 94	MAY 94
First A/C delivery	FEB 96	FEB 96	FEB 96
DT-III			
Start	FEB 96	FEB 96	FEB 96
Complete	AUG 96	AUG 96	AUG 96
OT-IIIIB FOT&E			
Start	FEB 96	FEB 96	FEB 96
Complete	SEP 96	SEP 96	SEP 96
IOC (Completion of FOT&E Report)	DEC 96	DEC 96	DEC 96
FOC (Delivery of the 20th REMAN acft)	MAR 99	MAR 99	MAR 99
Material Support Date 1/	MAR 99	MAR 99	MAR 99
Navy Support Date 2/	MAR 99	MAR 99	MAR 99

1/ (Milestone IV APB - 06/30/94) Material Support Date for Night Attack/Radar program is planned for April 1995.

2/ (Milestone IV APB - 06/30/94) Navy Support Date for Night Attack/Radar program is planned for April 1996.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Dimensions				
Length	47.97	47.97 / 47.97	TBD	47.97
Height	11.65	11.65 / 11.65	TBD	11.65
Span	30.33	30.33 / 30.33	TBD	30.33
Weight Empty (lbs)	14,700	14,700 / 14,730	TBD	14,700

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AV-8B Remanufacture, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Max VTOGW Wt (lbs) (Vertical Take-off Gross Weight)	19,200	19,200 / 19,200	TBD	19,200
Max STOGW Wt (lbs)	29,750	29,750 / 29,750	TBD	29,750
Speed Max. (Mach)	.83	.83 / .83	TBD	.83
Mission Radius (nm)				
CAS	142	142 / 95	TBD	142
Interdiction	486	486 / 440	TBD	486
Reliability (hrs)				
MFHBMCF(HW) - Oper	12.6	12.6 / 12.6	TBD	12.6
Maintainability (hrs)				
MMH/FH(HW) Oper	3.2	3.2 / 3.2	TBD	3.2
MTTR (Critical)	6.7	6.7 / 6.7	TBD	6.7

(b)(1)

Air-to-Air Det Range

(5 sq.m. tgt) (nm)

Nose, VS 1000 (ft)	8	8	/ 8	TBD	8
Tail, RWS 2000 (ft)	80	80	/ 65	TBD	80

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

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AV-8B Remanufacture, December 31, 1994

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)	0.0	0.0	0.0
Procurement	1843.0	1843.0	1920.9
Airframe	(1163.2)		(1171.7)
Engine	(310.6)		(306.8)
Avionics	(37.2)		(36.7)
Other GFE	(1.1)		(1.1)
Total Flyaway	(1512.1)		(1516.3)
Other Wpn Sys Cost	(0.0)		(0.0)
Peculiar Support	(248.3)		(314.7)
Initial Spares	(82.6)		(89.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 94 Base-Year \$	1843.0	1843.0	1920.9
Escalation	315.4	315.4	355.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(315.4)	(315.4)	(355.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2158.4	2158.4	2276.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	73	73	72
Total	73	73	72

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 June 30, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

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12. (U) Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (JUN 94 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY94\$)	1920.9	1843.0	
(2) Quantity	72	73	
(3) Unit Cost	26.679	25.247	5.674
b. (U) Procurement			
(1) Cost (BY94\$)	1920.9	1843.0	
(2) Quantity	72	73	
(3) Unit Cost	26.679	25.247	5.674

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AV-8B Remanufacture, December 31, 1994

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	2158.4	0.0	2158.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-5.0	-	-5.0
Quantity	-	-20.9	-	-20.9
Schedule	-	62.3	-	+62.3
Engineering	-	-	-	-
Estimating	-	-14.8	-	-14.8
Other	-	-	-	-
Support	-	96.3	-	+96.3
Subtotal	-	+117.9	-	+117.9
Total Changes	-	+117.9	-	+117.9
Current Estimate	-	2276.3	-	2276.3

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AV-8B Remanufacture, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	1843.0	0.0	1843.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-16.6	-	-16.6
Schedule	-	32.7	-	+32.7
Engineering	-	-	-	-
Estimating	-	-11.9	-	-11.9
Other	-	-	-	-
Support	-	73.7	-	+73.7
Subtotal	-	+77.9	-	+77.9
Total Changes	-	+77.9	-	+77.9
Current Estimate	-	1920.9	-	1920.9

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised escalation rates and procurement outlay factors. (Economic)	N/A	-5.0
Total quantity procurement was reduced by one from seventy-three to seventy-two. (Quantity)	-16.6	-20.9

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AV-8B Remanufacture, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
The program was extended one year from 2000 to 2001. (Schedule)	+32.7	+62.3
Rates are impacted by the new procurement quantity and schedule. Contractor overhead and labor rates have been revised due to new procurement outlay factors. (Estimating)	-11.9	-14.8
Costs are impacted by extension of program one year from 2000 to 2001. (Support)	+73.7	+96.3
Procurement Subtotal	+77.9	+117.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
29.567	-0.069	0.120	0.865	--	-0.206	--	1.338	2.048	31.615

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --	Initial Contract Price		
(U) Airframe:	Target	Ceiling	Qty
McDonnell Douglas Corp., St. Louis, MO	\$102.6	\$0.0	4
N00019-93-C-0124, FFP			
Award: May 6, 1994			
Definitized: N/A			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$102.6	\$0.0	4	\$102.6	\$102.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

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AV-8B Remanufacture, December 31, 1994

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: 11.9% (\$271.4 / \$2276.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY94-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	-	-	-	-	-
Procurement	271.4	185.7	377.9	1441.3	2276.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	271.4	185.7	377.9	1441.3	2276.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy

1994	4	6.6	105.8	133.0	139.4	119.4	11.3	2.0
1995	4	4.0	101.8	122.3	132.0	5.0		2.7
1996	4		100.9	167.1	185.7			3.0
1997	12		241.3	330.0	377.9			3.0
1998	12		240.7	287.7	339.3			3.0
1999	12		241.4	304.6	370.0			3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2000	12		238.9	282.6	353.6			3.0
2001	12		234.9	293.6	378.4			3.0
Subtot	72	10.6	1505.7	1920.9	2276.3	124.4	11.3	
Grand Total	72	10.6	1505.7	1920.9	2276.3	124.4	11.3	

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

Flight hours per aircraft per month 23.7
 Number of aircraft/squadron 20
 (14 aircraft per squadron with a six aircraft detachment)
 Consumption rate gal/hr 758.4
 POL cost, JP-5, per barrel, FY 92 29.8

Date of estimate: 20 October 1993

Source: AIR-524 FY92 Operating and Support Cost Update Report

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AV-8B Remanufacture, December 31, 1994

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per squadron/year	Avg Annual Cost Per squadron/year
Personnel	8.8	N/A
Consumables	14.9	N/A
Depot Maintenance	5.1	N/A
Sustaining Investment	2.7	N/A
Indirect Cost	0.6	N/A
Total	32.1	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
OM&N	20.5	9.0	10.5	---	40.0
APN-6	1.6	0.6	---	---	2.2
Total	22.1	9.6	10.5	---	42.2

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A-28 STINGER RMP

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: STINGER-RMP

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):

FIM 92C/D Man-Portable Air Defense Guided Missile System
(STINGER-RMP)

AS AMENDED
CLEARED

FOR OPEN PUBLICATION

2. (U) DoD Component: Army

MAR 24 1995 5

3. (U) Responsible Office and Telephone Number:

FAAD PROJECT OFFICE
SFAE-MSL-FAD
REDSTONE ARS, AL 35898-5630

COL DANIEL M. PROBERTT
Assigned: August 4, 1993
AV 746-4927 COMM (205) 876-4927
INFORMATION
DEPARTMENT OF DEFENSE

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 64306A (Sunk)
Project D524

PROCUREMENT:

APPN 2032 ICN C18500 (Army)

24 MAR 1995
Scroy Bromberg
SECURITY REVIEW, COMUSMACV, USA

~~Classified By: STINGER DOG BRIG 5 AUG 92~~

~~Declassify on: OADR~~

~~Source: STINGER DOG BRIG 5 AUG 92~~

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STINGER-RMP, December 31, 1994

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. The Block I upgrade project, which adds a roll sensor and enhanced software, solves the recognized system performance deficiencies in countermeasures and other engagement conditions and increases terminal accuracy. This project extends the missile service life and will also establish a government post deployment software support posture.

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.

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STINGER-RMP, December 31, 1994

7a. (U) Program Highlights (Cont'd):

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 FY 1987 letter 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 included additional test requirements that resulted in test milestone slippages. The Army completed the approved test requirements in late October 1989.

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. In December 1991 the STINGER retrograde/retrofit program began at Red River Army Depot under management of the Air-to-Air Missile Project Office. The effort involved cleaning/refurbishment of missile rounds, gripstocks, containers, and battery coolant units (BCUs) returned from Southwest Asia.

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 initial retrograde/retrofit program at Red River Army Depot was completed in December 1992. Transition to battery coolant units incorporating lithium battery technology began in 1992. In 1992 STINGER missiles

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STINGER-RMP, December 31, 1994

7a. (U) Program Highlights (Cont'd):

worldwide were retrofitted with booster pellets in the umbilical assembly to improve cold weather performance. Booster pellets were also installed in production missiles.

A contract for the balance of the FY91 program (2563 missiles) was definitized on 24 September 1993. The contract was awarded sole source to Hughes Missile Systems Company (HMSC) as a minimum sustaining rate buy. The Block I letter contract was definitized 24 March 1993 as a 3 year incrementally funded cost plus incentive fee contract for FY93-FY95. Hughes Missile Systems Company was awarded an additional minimum sustaining rate buy for 300 FY93 RMP missiles in letter contract awarded 28 May 1993. On 30 September 1993 a modification to the FY91 minimum sustaining rate buy to HMSC was made to replace 539 STINGER-RMP missiles with STINGER Block I rounds. A follow-on retrograde/retrofit contract was awarded 23 September 1993 to HMSC to complete the work on the Southwest Asia rounds that were outstanding from the initial contract that expired 31 December 1992.

b. (U) Significant Developments Since Last Report -- Congress approved the Army's request for Omnibus reprogramming of \$9.6M of the FY94 STINGER missile procurement funding (\$33.4M) for retrofit of missiles to Block I configuration. The remaining \$23.8M will be used for support activities associated with remaining missile production and delivery to include orderly production shutdown and storage of equipment not needed for the Block I retrofit program. Raytheon, the second source for STINGER-RMP missiles delivered their last missile in Aug 94. The FY93 RMP missile letter contract with HMSC was definitized 19 Dec 94. It included an additional quantity of 44 missiles for an FMS case.

We anticipate this report will be the final SAR since STINGER-RMP deliveries and expenditures exceed 90% of the total program. The Stinger Block I and Block II retrofit programs are not part of this report. They are below Acquisition Category I thresholds and are managed as such.

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.

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STINGER-RMP, December 31, 1994

9. (U) Schedule:

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
ASARC III	JUN 83	JUN 83	JUN 83
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
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
FY87-89 MYP Deliveries Start	N/A	APR 90	APR 90
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 BUSA	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
FUE WESTCOM	N/A	AUG 93	SEP 92
FUE ARNG	N/A	JAN 94	OCT 92

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

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STINGER-RMP, December 31, 1994

9b. (U) Schedule (Cont'd):

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 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 FY87 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), FY87 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

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9b. (U) Schedule (Cont'd):

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. Corrects typographical error in previous SAR. 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. 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." 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.

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 February 04, 1991.

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STINGER-RMP, December 31, 1994

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------------------	------------	---	------------------------------------	-----------------------------

Intercept Range

No Offset:

(b)(1)

System Effectiveness
(Esc) Benign:

(b)(1)

Weapon Reliability	.82	.90	/ .82	.85	.86
Ready-to-Fire Weapon	35.5	N/A	/ N/A	35	36
Weight Including Onboard IFF Antenna (lbs)					

* System Assessment demonstrated performance based on Performance Assessment completed August 1990 and STINGER-RMP flight test reliability scoring completed September 1991.

1/ Esc = Preuse reliability x prefire reliability x firing reliability x missile lethality for K kills x Pdet. The Esc values for RMP listed above reflect performance of the current software. The current materiel need document allows for a 50% degradation on countermeasures. STINGER-RMP is a one-shot device. It has no mean time between failure (MTBF) or mean time to repair (MTTR) requirement. Wpn Rel = Prefire reliability x fire reliability x warhead detonation reliability.

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STINGER-RMP, December 31, 1994

10b. (U) Performance Characteristics (Cont'd):

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 MICON Performance Estimate and current understanding of infrared countermeasures effects were incorporated in the Eso formula. System effectiveness changed to 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 February 04, 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	52.3	46.1	46.1
Procurement	2215.3	1089.7	1138.2
Flyaway	(2095.7)		(1069.3)
Other Wpn Sys Cost	(119.6)		(68.9)
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 83 Base-Year \$	2267.6	1135.8	1184.3
 Escalation	693.6	348.6	344.9
Development (RDT&E)	(7.0)	(3.2)	(3.2)
Procurement	(686.6)	(345.4)	(341.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2961.2	1484.4	1529.2

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STINGER-RMP, December 31, 1994

11b. (U) Total Program Cost and Quantity (Cont'd):

b. (U) Quantity --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	6	6	9
Procurement	<u>36028</u>	<u>28799</u>	<u>29099</u>
Total	36034	28805	29108

c. ~~(U)~~ Foreign Military Sales/International Cooperative Programs --
Cost

	Country	Quantity	(\$,M)
(U)	Germany	9	70.7
(U)	Israel	277	24.0
(U)	Japan	600	75.6
(U)	Norway	0	0.3
(U)	Switzerland	2	55.5
(U)	Greece	500	39.7
(U)	Portugal	33	3.9
(U)	Denmark	1,140	60.8
(U)	Italy	24	1.7
(U)	Sweden	0	0.4
	Total	2,585	\$332.6

(b)(1)

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 February 04, 1991.

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STINGER-RMP, December 31, 1994

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 91 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (\$Y83\$)	1184.3	1135.8	
(2) Quantity	29108	28805	
(3) Unit Cost	0.041	0.039	3.185
b. (U) Procurement			
(1) Cost (\$Y83\$)	1138.2	1089.7	
(2) Quantity	29099	28799	
(3) Unit Cost	0.039	0.038	3.374

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STINGER-RMP, December 31, 1994

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	+0.6	-	-0.6
Quantity	+0.2	-929.6	-	-929.4
Schedule	-	+115.6	-	+115.6
Engineering	+3.7	-	-	+3.7
Estimating	-12.7	-533.7	-	-546.4
Other	-	-	-	-
Support	-	-65.3	-	-65.3
Subtotal	-10.0	-1412.4	-	-1422.4
Current Changes:				
Economic	-	-6.5	-	-6.5
Quantity	-	-19.6	-	-19.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	16.2	-	+16.2
Other	-	-	-	-
Support	-	0.3	-	+0.3
Subtotal	-	-9.6	-	-9.6
Total Changes	-10.0	-1422.0	-	-1432.0
Current Estimate	49.3	1479.9	-	1529.2

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STINGER-RMP, December 31, 1994

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	-655.1	-	-654.5
Schedule	-	+84.6	-	+84.6
Engineering	+3.7	-	-	+3.7
Estimating	-10.5	-454.8	-	-465.3
Other	-	-	-	-
Support	-	-51.0	-	-51.0
Subtotal	-6.2	-1076.3	-	-1082.5
Current Changes:				
Quantity	-	-12.6	-	-12.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	11.5	-	+11.5
Other	-	-	-	-
Support	-	0.3	-	+0.3
Subtotal	-	-0.8	-	-0.8
Total Changes	-6.2	-1077.1	-	-1083.3
Current Estimate	46.1	1138.2	-	1184.3

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

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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. Additional STINGER-RMP missile buy in FY 93 of 300 missiles. Correction to Dec92 SAR Variance: 300 missiles increase (FY93). Increase of 300 missiles in FY94

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. Schedule change for stretch out of production.

Estimating: 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. Adjustment for current and prior inflation. Revised estimate for production associated with 300 new missiles. Revised FY 91 estimate incorporating adjusted in-house and test requirements. Correction to Dec92 SAR Variance: Allocation for 300 missiles increase (FY93). Allocation for 300 missiles increase (FY94). Adjusted inhouse and test

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13b. (U) Cost Variance Analysis (Cont'd):

requirements. Revised estimate associated with 300 missiles (FY94).

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 supplemental for retrograde of missiles deployed to SWA. Increased TPF requirement/refined estimate. Correction of miscategorization of support element reported as flyaway. Adjustment for current and prior inflation. Desert Storm supplemented retrograde transferred from MIPA to OMA funding. Deletion of Total Package Fielding funding from outyear budget. Additional support associated with the FY 93 missile buy. Adjustment for current and prior inflation. Revision to Total Package Fielding (TPF) estimate.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-6.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.1
Adjustment for Current & Prior Inflation. (Estimating)	+4.9	+6.1
Total Variance associated with decrease of 300 units.	-10.6	-16.5
Quantity Variance resulting from decrease in procurement of 300 missiles. (Quantity)	-12.6	-19.6
Allocation to Estimating Variance resulting from quantity change. (Estimating)	+2.0	+3.1
Estimating associated with 300 fewer missiles. (Estimating)	+4.6	+7.0

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Support)	+0.3	+0.3
Procurement Subtotal	<u>-0.8</u>	<u>-9.6</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.082	--	-0.013	0.004	--	-0.018	--	-0.002	-0.029	0.053

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --	Initial Contract Price		
(U) <u>RMP FY91 PRODUCTION:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL DYNAMICS, RANCHO CUCAMONGA, CA			
DAAH01-92-C-0252, FFP	\$120.0	N/A	2863
Award: May 13, 1992			
Definitized: September 24, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$116.9	N/A	2863	\$116.9	\$116.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Contract quantity includes all customers.

(U) <u>RMP FY93 PRODUCTION:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
HUGHES MISSILE SYSTEMS CO, POMONA, CA					
DAAH01-93-C-0264, FFP	\$19.1	N/A	344		
Award: May 28, 1993					
Definitized: December 19, 1994					

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$19.6	N/A	344	\$19.6	\$19.6

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: 100.0% (12 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$1529.2 / \$1529.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY83-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	49.3	-	-	-	49.3
Procurement	1479.9	-	-	-	1479.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1529.2	-	-	-	1529.2

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STINGER-RMP, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1983				20.3	20.0	20.0	20.0	4.0
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		162.8	171.8	198.9	198.9	198.6	3.4
1986	2909		155.6	177.1	212.2	212.2	212.2	2.8
1987	3541		153.4	159.8	199.2	199.2	199.2	2.7
1988	3942		126.1	131.5	169.7	169.7	169.7	3.0
1989	6750		181.0	178.4	241.3	241.3	236.3	4.2
1990	2375		77.2	83.7	116.8	116.8	107.2	4.1
1991	6922		194.7	180.1	257.8	257.8	205.5	4.3
1992				17.4	25.5	25.5	20.3	3.0

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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: 2032 Missile Procurement, Army (Cont'd)

1993	300		18.5	23.0	34.7	32.7	13.6	2.7
1994				15.4	23.8	16.3	3.6	2.0
Subtot	29099		1069.3	1138.2	1479.9	1470.4	1366.2	
Grand Total	29108		1069.3	1184.3	1529.2	1519.7	1415.5	

Expenditures and obligations reflect Program Office records as of December 31, 1994.

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	9/9
Procurement	27382/27382

b. (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 Bn, 67th ADA, Fort 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. STINGER-RMP has no antecedent system.

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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 29408).

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	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Depot Maintenance	17.4	2.0	2.1	6.3	27.8
Cont Log Spt (CLS)	0.3	---	---	---	0.3
Sustaining Eng	0.4	0.9	1.8	7.6	10.7
Other	0.2	---	---	---	0.2
Total	18.3	2.9	3.9	13.9	39.0

Depot Maintenance: Provide for repair and overhaul of the STINGER system.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: NAS

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE1. Designation and Nomenclature (Preferred Name):

National Airspace System (NAS)

SAF/PAS

9.5-101 - 1

2. DoD Component: USAF

Joint Participants:

Army, Navy

3. Responsible Office and Telephone Number:

ESC/TGN

11 Eglin Street

Hanscom AFB

Bedford, MA 01731-2120

Lt Col David MacKenzie

Assigned: April 15, 1994

AV 478-4947 COMM (617) 377-4947

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0305137F, 0204696N, 0604633A

5. Related Programs:

Federal Aviation Administration (FAA) Capital Investment Plan (CIP) program.

6. Mission and Description:

The DoD National Airspace System (NAS) program will modernize the DoD radar approach control facilities in parallel with the Federal

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6. Mission and Description (Cont'd):

Aviation Administration (FAA). DoD will acquire, to the maximum extent practical, systems on contract or systems to be on contract with the FAA to reduce development costs and prevent duplication. If the DoD does not modernize the DoD Air Traffic Control (ATC) system, the resulting reduced interoperability between current DoD and FAA facilities will negatively impact DoD flight operations. The DoD NAS program provides systems and facilities compatible/interoperable with the FAA modernization, prevents DoD flight delays and cancellations, continues DoD's access into Special Use Airspace, provides transparent services to military and civil aircraft, replaces aging DoD ATC systems, and increases flight safety. DoD will upgrade voice, data, and sensor systems as well as facility configurations and operations concepts to provide continued quantity and quality of ATC services to the aviation community. The NAS program also includes the Military Airspace Management System (MAMS) which will schedule and manage special use airspace. MAMS is an automated Special Use Airspace (SUA) scheduling and utilization reporting tool which will enable DoD to more efficiently manage SUA. DoD military ATC and fighting/flying readiness will be maintained.

7. Program Highlights:

a. Significant Historical Developments --

The significant events of 1993 included the demonstration of the Military Airspace Management System (MAMS) prototype software at Edwards AFB, CA, on the MAMS prototype; demonstration of a repackaged Federal Aviation Administration (FAA) Common Console into the DoD configuration; release of the MAMS Request for Proposal (RFP) and subsequent source selection; and formal approval of executive interagency agreements for test, procurement and support of FAA Automation Systems.

b. Significant Developments Since Last Report --

Chief of Staff of the Air Force (CSAF) approved an updated Operational Requirements Documents (ORDs) for the National Airspace System (NAS) and Military Airspace Management System (MAMS), on 3 Mar 94 and 11 Mar 94, respectively.

Change 1 to the National Airspace System (NAS) Acquisition Program Baseline (APB) was approved by the Air Force Acquisition Executive (AFAE) on 27 May 94.

The Military Airspace Management System (MAMS) successfully completed a Milestone II review and approval to proceed with contract award. The MAMS Engineering Management Development (EMD) contract was awarded to Computer Based Systems, Inc. (CBSI) on 8 Jun 94.

The National Airspace System (NAS) Test and Evaluation Master Plan

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7b. Program Highlights (Cont'd):

(TEMP) received OSD approval on 27 Jun 94.

The Federal Aviation Administration (FAA) released the Request for Proposal (RFP) for the Enhanced Terminal Voice Switch (ETVS) program on 9 Aug 94, and proposals are currently being evaluated.

Excellent progress continued in DoD's radar approach control modernization. The program office completed its evaluation of the FAA's Standard Terminal Automation Replacement System (STARS) to meet DoD operational and schedule requirements. The FAA's Operational Requirements Document (ORD) will satisfy DoD's automation requirements.

In Aug 94, the DoD assumed from the FAA, the lead role for the Digital Airport Surveillance Radar (DASR) acquisition. The FAA will be offered options on the DoD contract. We will continue to develop a single integrated system to meet the needs of military and civil aviation.

The NAS program is expected to satisfy all mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no breaches to the AFAR approved APB dated 27 May 1994. Nunn-McCurdy unit cost reporting is not required for Pre-Milestone II programs IAW Title 10, USC, Section 2433.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
DOD ATCALS IN THE NAS			
Milestone 0	NOV 90	NOV 90	NOV 90
Milestone I	JUL 92	JUL 92	JUL 92
Milestone II	JAN 94	JAN 95	MAY 95
AUTOMATION (DAAS)			
Development Contract Award	MAR 94	N/A	N/A
DT&E			
Start	JAN 95	JAN 96	JAN 96
Complete	MAR 96	MAR 97	MAR 97
IOT&E			
Start	MAR 96	MAR 97	MAR 97

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Complete	SEP 96	OCT 97	OCT 97
VOICE (VCSS)			
QOT&E			
Start	N/A	OCT 96	OCT 96
Complete	N/A	APR 97	APR 97
RADAR (DASR)			
QOT&E			
Start	N/A	FEB 98	FEB 98
Complete	N/A	AUG 98	AUG 98
Milestone III	MAR 97	MAR 98	MAR 98
Production Award/Exercise (VCSS/DAAS)	N/A	APR 98	APR 98
Program Review (DASR FPA)	N/A	NOV 98	NOV 98
Production Award/Exercise	APR 97	NOV 98	NOV 98
First Delivery	DEC 98	APR 99	APR 99
IOC (First DOD Site Activation)	OCT 99	APR 00	APR 00
FOC	APR 05	APR 06	APR 06
MAMS			
Development Contract Award	JUL 93	JUN 94	JUN 94
DT&E			
Start	OCT 95	SEP 96	SEP 96
Complete	MAR 96	FEB 97	FEB 97
IOT&E			
Start	APR 96	APR 97	APR 97
Complete	JUL 96	JUL 97	JUL 97
IOC (First Delivery)	JUL 96	JUL 97	JUL 97

ATCALS - Air Traffic Control and Landing Systems
 IOC - Initial Operational Capability
 FOC - Full Operational Capability
 MAMS - Military Airspace Management System

b. Previous Change Explanations --

The Milestone II Review was adjusted to incorporate DoD's impact to the Federal Aviation Administration (FAA) initiation of an NDI program for a new terminal automation system to which the DoD NAS baseline is synchronized.

The FAA Development Contract Award was approved for deletion by the AFAS in the 27 May 94 revised APB. There will be no development contracts awarded.

The MAMS KMD contract was awarded to Computer Based Systems, Inc. on

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9b. Schedule (Cont'd):

8 June 1994 versus the originally expected May 1994 award date. A greater number of proposals than anticipated resulted in a longer source selection.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

AFAB Approved Acquisition Program Baseline dated March 1, 1993.

Approved Program:

AFAB Approved Acquisition Program Baseline dated May 27, 1994.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
DOD ATCALS IN THE NAS					
Automation Data/ Voice Recording	Synch- ronized Playback	N/A	/ N/A	TBD	N/A
Inter/Intrafacility Data Transfer					
a. Auto Transfer of Position Track Data	N/A	IAW ICD	/ IAW ICD	TBD	IAW ICD
b. Electronic Interfacility Transfer of Flight Plans	N/A	IAW ICD	/ IAW ICD	TBD	IAW ICD
Automation Radar Presentation	Mosaic & Selec- tive Radar Display	N/A	/ N/A	TBD	N/A
Aircraft Tracked Medium (LCF)	N/A	900	/ 250	TBD	900
Automation Compatibility Data Processing	FAA AAS & Digital Radars	N/A	/ N/A	TBD	N/A

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10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Radar Compatibility	Digital & Analog Auto- mation Systems	N/A	/ N/A	TBD	N/A	
Radar Subclutter Visibility (dB)	N/A	55	/ 42	TBD	43	(Ch-1)
Voice Compatibility/ Interoperability	FAA Systems	Digital Voice Systems	/ Inter- face to existing FAA Systems	TBD	Digital Voice Systems	
Voice Switch Lighting Environments	Radar Rooms & Control Towers	N/A	/ N/A	TBD	N/A	
Voice System Interface Capability	Digital & Analog	N/A	/ N/A	TBD	N/A	
Voice Recording	All Voice Inter- faces	N/A	/ N/A	TBD	N/A	
MAMS Conflict Identification	Auto- mated	100% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 10 (sec)	/ 98% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 30 (sec)	TBD	100% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 10 (sec)	

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10a. Performance Characteristics (Cont'd):

	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Interface with FAA	Elec- tronic Data Transfer	Trans- mittal Time for 85% of messages between schedul- er and FAA <or= 5 (min)	/ Trans- mittal Time for 85% of messages between Schedul- er and FAA <or= 10 (min)	TBD	Trans- mittal Time for 85% of messages between schedul- er and FAA <or= 5 (min)
Reporting	Auto- mated	Process- ing Time of Util- ization Data Requests <or= 1 (min); Total Manual and Automat- ic Report Genera- tion <or= 10 (min)	/ Process- ing Time of Util- ization Data Requests <or= 10 (min); Total Manual and Automat- ic Report Genera- tion <or= 30 (min)	TBD	Process- ing Time of Util- ization Data Requests <or= 1 (min); Total Manual and Automat- ic Report Genera- tion <or= 10 (min)

ICD - Interface Control Document

b. Previous Change Explanations --

Current estimate of stub items changed to reflect approval of the revised NAS and MAMS ORDs on 3 March 1994 and 11 March 1994 respectively. The new ORDs portrayed a requested reduction in key parameters and quantified remaining parameters as required.

c. Current Change Explanations --

(Ch-1) The current estimate of Radar Subclutter Visibility has been reduced from 55 dB to 43 dB to reflect the results of a recent DoD

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10c. Performance Characteristics (Cont'd):

market survey. This survey evaluated the current capability of industry to meet this parameter at 43 dB. The program is not impacted since 43 dB falls within the threshold range for this stub item.

d. References --

Planning Estimate:

AFAB Approved Acquisition Program Baseline dated March 1, 1993.

Approved Program:

AFAB Approved Acquisition Program Baseline dated May 27, 1994.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	102.1	102.1	106.1
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	102.1	102.1	106.1
 Escalation	20.5	20.5	18.5
Development (RDT&E)	(20.5)	(20.5)	(18.5)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	122.6	122.6	124.6
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>0</u>	<u>N/A</u>	<u>N/A</u>
Total	0	0	0

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

AFAB Approved Acquisition Program Baseline dated March 1, 1993.

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11e. Total Program Cost and Quantity (Cont'd):

Approved Program:

AFAE Approved Acquisition Program Baseline dated May 27, 1994.

12. 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	122.6	0.0	0.0	122.6
Previous Changes:				
Economic	-3.7	-	-	-3.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.0	-	-	+1.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.7	-	-	-2.7
Current Changes:				
Economic	-0.2	-	-	-0.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.9	-	-	+4.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.7	-	-	+4.7
Total Changes	+2.0	-	-	+2.0
Current Estimate	124.6	-	-	124.6

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	102.1	0.0	0.0	102.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.2	-	-	-0.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.2	-	-	-0.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.0	-	-	+4.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.0	-	-	+4.0
Total Changes	+3.8	-	-	+3.8
Adjustments	+0.2	-	-	+0.2
Current Estimate	106.1	-	-	106.1

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation rates.

Estimating: Adjustments were made for current and prior year inflation, refinement of the estimate, as well as for a Small Business Innovative Research (SBIR) reduction and a Congressional general reduction.

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13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
Refinement of estimate associated with the transfer of radar acquisition responsibility from the FAA to the DoD. (Estimating)	+3.8	+4.7
 RDT&E Subtotal	<u>+4.0</u>	<u>+4.7</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information:

The NAS program has no large active contracts.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 50.0% (6 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 61.0% (\$76.0 / \$124.6)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	76.0	13.7	17.2	17.7	124.6
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	76.0	13.7	17.2	17.7	124.6

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

1990				2.9	3.0	3.0	3.0	4.3
Subtot				2.9	3.0	3.0	3.0	
Army				2.9	3.0	3.0	3.0	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				3.9	4.0	4.0	4.0	4.3
Subtot				3.9	4.0	4.0	4.0	
Navy				3.9	4.0	4.0	4.0	

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NAS, December 31, 1994

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: 3600 Research, Development, Test + Eval, AF

1990				3.9	4.0	4.0	4.0	4.0
1991				9.3	9.9	9.9	9.8	4.3
1992				3.8	4.2	4.2	4.1	2.8
1993				5.9	6.6	6.6	6.1	2.7
1994				12.4	14.2	13.6	7.2	2.0
1995				25.5	30.1	7.5	2.0	2.7
1996				11.3	13.7			3.0
1997				13.7	17.2			3.0
1998				7.7	9.9			3.0
1999				3.7	4.9			3.0
2000				1.2	1.6			3.0
2001				0.9	1.3			3.0
Subtot				99.3	117.6	45.8	33.2	
USAF				99.3	117.6	45.8	33.2	
Grand Total				106.1	124.6	52.8	40.2	

Expenditures and Obligations reflect program office records as of January 30, 1995.

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NAS, December 31, 1994

17. Production Rate Data:

a. Deliveries (Plan/Actual) -- None.

Not applicable for pre-Milestone II programs.

b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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A-18 LONGBOW HELLFIRE

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (O&A) 823)

PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 1994

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AS AMENDED

1. (U) Designation and Nomenclature (Preferred Name):
LONGBOW HELLFIRE - subsystem of the AH-64 APACHE Weapon FOR OPEN PUBLICATION System

CLEARED

2. (U) DoD Component: Army

MAR 24 1995 5

3. (U) Responsible Office and Telephone Number:

PROJECT MANAGER

COL CHARLES W. GREER

AIR-TO-GROUND MISSILE SYSTEMS

Assigned: February 3, 1992

ATTN: SFAE-MSL-HD

AV 746-1365 COMM (205) 876-1365

RSA, AL 35898-5610

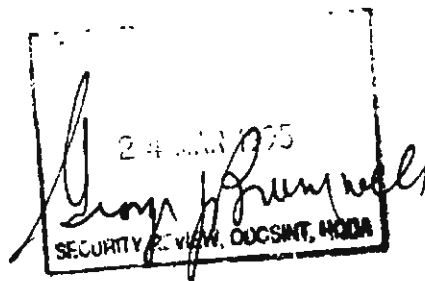
4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 64816 Project DC13, DC27

PROCUREMENT:

APPN 2032 ICN C70300 (Army)



~~Classified by: Air to Ground Missile Systems Dept. 1 Jan 95~~
~~Declassify on: Originating Agency Determination Required (OADR)~~
~~Downgrade instructions: Not subject to automatic downgrade~~

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95-c-0830

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Longbow HELLFIRE, December 31, 1994

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 guidance section replacements. A version of the missile utilizing laser guidance, laser HELLFIRE, is presently in production and is reported separately. Longbow HELLFIRE (a version utilizing millimeter wave radar guidance) is in 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 Radio 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 also 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 Aug 85, a contract was awarded in Nov 85 to MMC and WEC, as a joint venture (JV), for preliminary design of the tactical Longbow System. This was followed in Aug 86 by the award of a Proof of Principle demonstration contract to the JV. An Initial Design Phase contract was awarded to the JV in Sep 89. Proof of principal of the Longbow missile was accomplished 11 Apr 90. The Defense Acquisition Board

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Longbow HELLFIRE, December 31, 1994

7a. (U) Program Highlights (Cont'd):

(DAS) granted approval for engineering and 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. 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, initiation of production was delayed by one year and the procurement program was stretched. A transceiver producibility enhancement program (PEP) was initiated in Oct 93.

b. (U) Significant Developments Since Last Report --
The Longbow HELLFIRE program successfully completed 35 missile flight tests of the 38 conducted, and all component qualification tests have been completed satisfactorily except for the producibility enhanced transceiver, container, and environmental cover which will be conducted in CY 95. As of 31 Dec 94, eight PEP transceivers have been delivered. The Conventional Systems Committee review for Longbow long lead items and initial production facilitization was held 5 Oct 94. A Longbow HELLFIRE Cost Reduction Plan was briefed to the Principal Deputy to the Defense Acquisition Executive on 1 Dec 94. The plan was approved and funding was released for long lead procurement and execution of the cost reduction plan. The contract for long lead procurement was awarded 23 Dec 94 by definitization of option one under the engineering and manufacturing development contract.

The Longbow HELLFIRE Missile System is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --
The 40th and final engineering development flight test was completed on 19 Jan 95. The Longbow HELLFIRE program successfully hit 37 out of 40 targets in this program. On 9 Feb 95, the Longbow HELLFIRE missile completed Phase I (Gunnery) of Initial Operational Test and Evaluation at China Lake, CA. Scoring committee actions are not complete and have not been released.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB), 4 Aug 94. There are no Nunn-McCurdy unit cost breaches.

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Longbow Hellfire, December 31, 1994

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I In-Process Review	AUG 85	AUG 85	AUG 85
Milestone IB ASARC	JUL 89	JUL 89	JUL 89
Milestone II DAB	DEC 90	DEC 90	DEC 90
FSD Contract Award	DEC 90	DEC 90	DEC 90
Component Qual Test			
Start	MAY 93	AUG 93	AUG 93
Complete	SEP 93	DEC 94	APR 95 (Ch-1)
System Qual Test			
Start	MAR 94	JUL 94	JUL 94
Complete	NOV 94	DEC 94	APR 95 (Ch-1)
Milestone IIIA (DAB)	MAR 95	NOV 95	NOV 95
Low-Rate Initial Production Contract	APR 95	DEC 95	DEC 95
Award			
First Production Delivery	SEP 96	MAR 97	MAR 97
Full-Rate Production Contract Award	DEC 96	DEC 97	DEC 97
First Unit Equipped (FUE)	FEB 97	OCT 97	OCT 97

(b)(1)

b. (U) Previous Change Explanations --

(b)(1)

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Longbow Hellfire, December 31, 1994

9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

(Ch-1) Due to availability of hardware, completion of component qualification of the producibility enhanced design was changed from Dec 94 to Apr 95. This also delays completion of system qualification from Dec 94 to Apr 95.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated 08 March 1991.

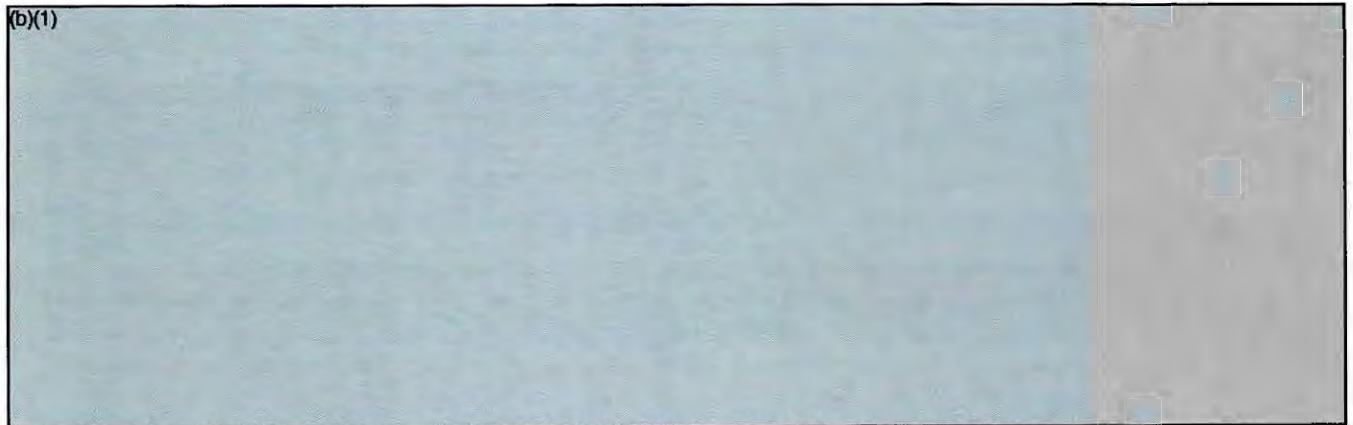
(U) Approved Program:

DAE Approved Acquisition Program Baseline dated August 04, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

(b)(1)



Missile Weight (lbs)	106	106	/ 108	108	108
----------------------	-----	-----	-------	-----	-----

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 August 04, 1994.

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Longbow Hellfire, December 31, 1994

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	303.4	358.2	357.9
Procurement	1344.7	2396.4	1696.7
Flyaway	(1323.7)		(1687.0)
Other Wpn Sys Cost	(3.9)		(5.0)
Peculiar Support	(17.1)		(4.7)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	1648.1	2754.6	2054.6
Escalation	542.2	787.3	578.4
Development (RDT&E)	(28.2)	(25.0)	(26.1)
Procurement	(514.0)	(762.3)	(552.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2190.3	3541.9	2633.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10896</u>	<u>13311</u>	<u>13311</u>
Total	10896	13311	13311

Note: Excludes 70 RDTE prototypes from the SAR Baseline and 70 from the Current Estimate that are not considered fully configured.

- (1) The Unit of Measure for this program is missiles.
- (2) At the Milestone II DAB in Dec 90, an LRIP I quantity of 500 and an LRIP II quantity of 618 was approved. In Aug 92, during a Special Program Review, the total LRIP quantity was increased to 1414 which was over 10% of the total program. This was necessary to align the missile deliveries with the aircraft fielding schedule. From the Dec 93 SAR the LRIP I quantity has changed from 364 to 352 and the LRIP II quantity has changed from 1050 to 1056.

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.

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LONGROW HELLFIRE, December 31, 1994

11a. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

DAB Approved Acquisition Program Baseline dated August 04, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (AUG 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	2054.6	2754.6	
(2) Quantity	13311	13311	
(3) Unit Cost	0.154	0.207	-25.412
b. (U) Procurement			
(1) Cost (BY91\$)	1696.7	2396.4	
(2) Quantity	13311	13311	
(3) Unit Cost	0.127	0.180	-29.198

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Longbow Hellfire, December 31, 1994

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	-6.1	+17.0	-	+10.9
Quantity	-	+413.7	-	+413.7
Schedule	-	-38.7	-	-38.7
Engineering	-	-	-	-
Estimating	+61.3	+849.2	-	+910.5
Other	-	-	-	-
Support	-	+11.4	-	+11.4
Subtotal	+55.2	+1252.6	-	+1307.8
Current Changes:				
Economic	-1.3	-34.7	-	-36.0
Quantity	-	-	-	-
Schedule	-	-86.6	-	-86.6
Engineering	-	-244.7	-	-244.7
Estimating	-1.5	-468.2	-	-469.7
Other	-	-	-	-
Support	-	-28.1	-	-28.1
Subtotal	-2.8	-862.3	-	-865.1
Total Changes	+52.4	+390.3	-	+442.7
Current Estimate	384.0	2249.0	-	2633.0

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Longbow Hellfire, December 31, 1994

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	-	+287.4	-	+287.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+55.7	+590.6	-	+646.3
Other	-	-	-	-
Support	-	+7.5	-	+7.5
Subtotal	+55.7	+885.5	-	+941.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-176.2	-	-176.2
Estimating	-1.2	-338.5	-	-339.7
Other	-	-	-	-
Support	-	-18.8	-	-18.8
Subtotal	-1.2	-533.5	-	-534.7
Total Changes	+54.5	+352.0	-	+406.5
Current Estimate	357.9	1696.7	-	2054.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Estimating: Reduction in hardware requirements for qualification. Under estimated complexity of transceiver. Adjustment for current and prior inflation. Revision of OGA and in-house costs.

Procurement

Economic: Revised escalation indices. Adjustment for negative program change.

Quantity: Addition of 2415 missiles.

Schedule: Shift of FY 2005 and FY 2006 missiles to FY 1998.

Estimating: Change in estimating methodology, includes

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Longbow Hellfire, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

not-to-exceed price options for all-up-rounds.
Estimating methodology changed to reflect peak
production rate of 125/month. Changed methodology
to reflect production rate increases to minimum
sustaining in full rate production.
Support: Increased data cost for program stretch. Cost for
2415 deicing domes. Revised support requirements
based on shift of procurement buy and reduced data
cost.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.4
Adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for current & prior inflation (Estimating)	+1.4	+1.5
Revised estimate to adjust FY 94 and FY 95 appropriated amount to reflect reprogramming and actual funds received. (Estimating)	-2.6	-3.0
RDT&E Subtotal	<u>-1.2</u>	<u>-2.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-43.8
Adjustment for negative program change. (Economic)	N/A	+9.1
Compressed schedule from FY 2005 to FY 2003, and increased rate from 1500 to 2200 per year. (Schedule)	--	-86.6
Producibility redesign for transceiver, radome, gimbal assembly, exciter, inertial measurement system, IF receiver. (Engineering)	-176.2	-244.7

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Longbow Hellfire, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in methodology to reflect peak production rate of 183/month, and 5 year multi-year procurement beginning in FY 1999. (Estimating)	-338.5	-468.2
Revised support requirements based on shift of procurement buy, and reduced data costs. (Support)	-18.8	-28.1
Procurement Subtotal	<u>-533.5</u>	<u>-862.3</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.201	-0.002	-0.006	-0.009	-0.018	0.033	--	-0.001	-0.003	0.198

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) Longbow Hellfire MSL Dev:

JV MMC/WEC, Orlando, FL
DAAH01-91-C-0057, CPIF/AF
Award: December 26, 1990
Definitized: May 7, 1991

			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>		<u>Qty</u>	
	\$265.6	N/A		67	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$267.1	N/A	70	\$326.6	\$328.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-18.5	\$-11.7
Cumulative Variances To Date (12/31/94)	<u>\$-30.3</u>	<u>\$-11.4</u>
Net Change	\$-11.8	\$0.3

Explanation of Change:

The primary contributor to the negative cost and schedule variances is the transceiver development, integration, assembly, test and

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Longbow Hellfire, December 31, 1994

15. (U) Contract Information (Cont'd):

checkout and the inertial measurement system. 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.

An over target baseline (OTB) was implemented in the Cost Performance Report for the period ending 28 Jun 92. The cumulative variance to date includes cost and schedule variances against the current performance measurement baseline as well as those existing prior to the time the 28 Jun 92 OTB was implemented.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 33.3% (5 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 16.2% (\$426.0 / \$2633.0)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2005)</u>	<u>Total</u>
RDT&E	384.0	-	-	-	384.0
Procurement	42.0	197.5	262.5	1747.0	2249.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	426.0	197.5	262.5	1747.0	2633.0

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Longbow Hellfire, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

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	61.0	4.3
1992			96.0	96.0	100.8	100.8	100.6	3.0
1993			76.3	76.3	82.2	82.1	82.1	2.7
1994			95.4	95.4	105.3	105.3	95.3	2.0
1995			30.4	30.4	34.5	17.6	1.6	2.7
Subtot			357.9	357.9	384.0	367.0	340.6	

Expenditures and obligations reflect program office records as of
16 Feb 95.

Appropriation: 2032 Missile Procurement, Army

1995		18.1		35.9	42.0	29.3		2.7
1996	352	13.3	169.2	165.3	197.5			3.0
1997	1056	28.0	184.3	213.3	262.5			3.0
1998	1506		220.1	221.3	280.5			3.0
1999	2000	11.4	218.8	231.6	302.3			3.0
2000	2200		225.1	226.6	304.6			3.0
2001	2200		223.2	224.7	311.2			3.0
2002	2200		208.3	209.7	299.1			3.0

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Longbow Hellfire, December 31, 1994

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)

2003	1797	4.5	162.7	136.1	199.9			3.0
2004				17.6	26.6			3.0
2005				14.6	22.8			3.0
Subtot	13311	75.3	1611.7	1696.7	2249.0	29.3		
Grand Total	13311	75.3	1969.6	2054.6	2633.0	396.3	340.6	

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) -- To Date
RDT&E 44/40
Procurement 0/0

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Operating and support costs for Longbow Hellfire are costed under the philosophy of a "certified round" concept. The sustainment phase costs are for FY 97 through FY 29. The following efforts are considered applicable:

o Replenishment spares for support equipment.

o 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.

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Longbow Hellfire, December 31, 1994

18a. (U) Operating and Support Costs (Cont'd):

- o Transportation costs associated with annual overhaul.
- o System Project Management
- o Surveillance Program.

There is no antecedent system.

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

Operating and support costs are from the 30 Nov 93 Program Office Estimate. Estimated average annual cost per missile for sustainment is \$7,224. Sustainment costs are defined in Section 18a.

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DO-COMP(O&A)823)

PROGRAM: LPD 17 Class

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
LPD 17 Class Amphibious Transport Dock Ship

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
LPD 17 AMPHIBIOUS TRANSPORT DOCK CAPT M.A. GAUTHIER
SHIP PROGRAM OFFICE (PMS317) Assigned: October 17, 1994
NAVAL SEA SYSTEMS COMMAND AV N/A COMM (703) 418-6074
ARLINGTON, VA 22242-5160

4. (U) Program Elements/Procurement Line Items:

NOTE:

PE 0603564N (Shared) Project S0408 (Shared)
PE 0604567N (Shared) Project S1803 (Shared), S2198 (Shared)

5. (U) Related Programs:
Landing Craft, Air Cushion (LCAC)

Security Classification

(ACAC) (SECRET)

95-C-0322

1995

Ann G. Anderson

Chief of the Office of

Naval Operations Dept. of the Navy

~~Classified By: OPNAVINST 5530.3C 107~~

~~Declassify on: Originating Agency Determination Required (OADR)~~

~~Exempted Instructions Not Subject to Automatic Downgrade~~

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LPD 17 Class, December 31, 1994

6. (U) Mission and Description:

The LPD 17 Class Amphibious Transport Dock Ship will be the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 Classes of Amphibious Ships in embarking, transporting and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct the primary amphibious warfare mission. The LPD 17 Class is required to fill the projected lift shortfall created by the retirement of the above ships.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Joint Requirements Oversight Council (JROC) validated the LPD 17 Class Mission Need Statement (MNS) on 18 September 1990. The planned retirement of 41 ships of the LKA 113, LPD 4, LSD 36, and LST 1179 Classes of Amphibious ships will result in a significant shortfall in amphibious lift and flexibility. LPD 17 Class will be the functional replacement for these ships. Planned deliveries of the LSD 41, LSD 41 (Cargo Variant), and LHD ships will not fully compensate for this projected shortfall. The LPD 17 Class ships are required to fill the projected shortfall and to balance amphibious assault lift elements. Milestone 0 DAB was held on 1 November 1990 and feasibility studies initiated in February 1991. The JROC issued a memorandum, JROCM-026-91 dated 28 June 1991, stating that JCS had reviewed the required military capabilities and determined that a requirement for amphibious assault lift existed. In addition, the Defense Planning Guidance, dated 22 May 1992, directed the Navy to maintain a crisis response forward presence in various areas of the world, with amphibious forces. Thirteen alternatives were examined during this phase. The Milestone I DAB was held on 11 January 1993 and on 19 January 1993, the Under Secretary of Defense for Acquisition, (USD(A)), signed the Acquisition Decision Memorandum (ADM) approving the Navy recommended ship alternative and authorizing the program to enter Phase I, Preliminary/Contract Design. The program is currently in Contract Design.

b. (U) Significant Developments Since Last Report --

Effective 17 October 1994, the LPD 17 Program was transferred out of FMS377. The new Program Office, FMS317, was established on 10 November 1994. The Program Manager and Deputy Program Manager are CAPT M.A. Gauthier and Gary Pickens, respectively.

The baseline ship includes the cooperative engagement capability and sufficient own-ship self-defense capability against sea-skimming anti-ship cruise missiles addressed by the FY94 and FY95 Appropriation Act reports.

The award of the lead ship was revised from FY96 to FY98. This additional time will allow for the optimum incorporation of the combat systems upgrade and the conduct of design tradeoffs.

The LPD 17 Class Program is a pre-Milestone II Program and

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LPD 17 Class, December 31, 1994

7b. (U) Program Highlights (Cont'd):

therefore is limited to RDT&E only in accordance with Title 10, USC, Section 2432.

The LPD 17 Class Program is expected to satisfy its mission requirements.

c. (U) Changes Since As Of Date -- None

8. (U) Threshold Breaches:

The APB for LPD 17 Class Program has not been approved. Nunn-McCurdy Unit Cost Reporting is not applicable for RDT&E only SARs.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I	JAN 93	N/A	JAN 93
DT&E (DT-I)			
Start	MAR 93	N/A	MAR 93
Complete	MAR 95	N/A	MAR 95
Program Status Review	MAR 94	N/A	TED (Ch-1)
OT&E (OT-I)			
Start	MAY 94	N/A	NOV 94(Ch-1)
Complete	NOV 94	N/A	JAN 95(Ch-1)
Milestone II	JUL 95	N/A	FEB 97(Ch-1)
Lead Ship Award	MAR 96	N/A	DEC 97(Ch-1)
DT&E (DT-IIA)			
Start	APR 96	N/A	JAN 98(Ch-1)
Complete	DEC 97	N/A	SEP 99(Ch-1)
OT&E (OT-II)			
Start	APR 96	N/A	JAN 98(Ch-1)
Complete	DEC 97	N/A	SEP 99(Ch-1)
Program Review	JAN 98	N/A	OCT 99(Ch-1)
DT&E (DT-IIB)			
Start	FEB 98	N/A	NOV 99(Ch-1)
Complete	JAN 02	N/A	OCT 03(Ch-1)
Lead Ship Delivery	JAN 02	N/A	OCT 03(Ch-1)
DT&E (DT-IIC)			
Start	FEB 02	N/A	NOV 03(Ch-1)
Complete	MAY 03	N/A	FEB 05(Ch-1)
OT&E (OT-IIIA)			
Start	MAR 03	N/A	DEC 04(Ch-1)
Complete	APR 03	N/A	JAN 05(Ch-1)
Milestone III	OCT 03	N/A	JUL 05(Ch-1)

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LPD 17 Class, December 31, 1994

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

Planning Estimate	Approved Program	Current Estimate
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(b)(1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1):

The Program Status Review, previously estimated for Jun 94, was deferred pending JROC revalidation of the ship's mission.

The Current Estimate of the OT&E (OT-1) Start and Completion has been revised to reflect COMOPTEVFOR scheduling of the Early Operational Assessment (EOA).

All other Current Estimate Milestone dates have been revised to reflect the change in lead ship award from FY96 to FY98.

d. (U) References --

(U) Planning Estimate:

Milestone I, Acquisition Decision Memorandum dated 19 Jan 93, subject "LPD 17 Class Amphibious Assault Ship Program."

(U) Approved Program: None.

10. (U) Performance Characteristics:

a. (U) Performance --	PE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

Mobility

(b)(1)

Amphibious Warfare

Embarkation (NET)

Troops	720	N/A	/ N/A	TBD	720
--------	-----	-----	-------	-----	-----

Vehicles (Sq Ft)(k)	25	N/A	/ N/A	TBD	25
---------------------	----	-----	-------	-----	----

Cargo (Cubic Feet)(k)	25	N/A	/ N/A	TBD	25
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LPD 17 Class, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Bulk Fuel (Gals)(k)	300	N/A	/ N/A	TED	300
LCAC	2	N/A	/ N/A	TED	2
VTOL Land/Launch Spots (CH-46 or CH-53E)	4/2	N/A	/ N/A	TED	4/2
VTOL Maint/Storage (CH-46 or CH-53E)	2/1	N/A	/ N/A	TED	2/1
Ship To Shore Capability (LCAC)					
Sustained Operations (reload 6 LCACs)(mins)	285	N/A	/ N/A	TED	285
Well Deck Cycle Time (min/cycle)	35	N/A	/ N/A	TED	35
Vertical Assault Capability					
External Load (min)	30	N/A	/ N/A	TED	30
Internal Load (min)	25	N/A	/ N/A	TED	25
Reliability	0.86	N/A	/ N/A	TED	0.86
Operational Availability (Ao)	0.80	N/A	/ N/A	TED	0.80
Maintainability	TED	N/A	/ N/A	TED	TED

(b)(1)

Self Defense
Probability of
Kill or Hit (30
second interval)

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LPD 17 Class, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------	---	------------------------------------	-----------------------------

(b)(1)

Footnotes:

LCAC - A second LCAC can be carried by converting vehicle space in the well deck.

Ship to Shore Capability (LCAC) - Surface assault turnaround includes time for well deck entry land, concurrent refuel/load and launch.

Vertical Assault Capability - Flight deck time includes awaiting landing spot, landing, concurrent refuel/reload, take-off and transit to marshalling point.

Reliability - During first 5 hours of an amphibious assault.

Survivability - The LPD 17 at design or LCAC operations displacement shall be hardened to resist weapons in terms of loss (sinking) probabilities. Analysis surrogate testing (scaled) will be conducted to assess ship's ability to meet survivability requirements above. Loss Values do not reflect vulnerability of embarked vehicles when loaded with munitions.

The LPD 17 Design shall provide Level II protection against conventional weapons and nuclear weapons effects, as defined in OPNAVINST 9070.1.

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10a

(b)(1)

Proximity Detonation - From medium sized torpedo or mine (MANTA type mine.)

Internal Detonation - From medium sized semi-armor piercing (SAP) anti-ship missile (EXOCET type missile).

(b)(1)

Self Defense Probability of Kill or Hit (30 second interval) - Threshold values are based on performance of existing systems. Objective values are based on potential future modifications to existing systems.

AAW - AAW: Defeat up to ___ of the following threats, each with a Pk of ___ arriving from any bearing during a 30 second interval.

ASUW - ASUW: Defeat up to ___ attacking patrol craft, (Boghammer Class) each with a Ph of ___ (one round).

ASW - ASW (Torpedo Defense): Defeat up to ___ of the following threats, each with a Pk of ___.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1):

The Current Estimate of loss probability has been revised due to an omission/error and now reflects the Planning Estimate.

d. (U) References --

(U) Planning Estimate:

Milestone I, Acquisition Decision Memorandum dated 19 Jan 93, subject "LPD 17 Class Amphibious Assault Ship Program."

(U) Approved Program: None.

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LPD 17 Class, December 31, 1994

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	61.1	0.0	74.9
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	0.0	0.0
Total FY 96 Base-Year \$	61.1	0.0	74.9
Escalation	-2.0	0.0	-0.8
Development (RDT&E)	(-2.0)	(0.0)	(-0.8)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	59.1	0.0	74.1

b. (U) Quantity --

Development (RDT&E)	0	N/A	N/A
Procurement	0	N/A	N/A
Total	0	N/A	N/A

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

FY 1995 President's Budget, dated February 7, 1994.

(U) Approved Program: None.

12. (U) Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

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LPD 17 Class, December 31, 1994

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	ROT&E	PROC	MILCON	TOTAL
Planning Estimate	59.1	0.0	0.0	59.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	0.2	-	-	+0.2
Quantity	-	-	-	-
Schedule	5.4	-	-	+5.4
Engineering	3.5	-	-	+3.5
Estimating	5.9	-	-	+5.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+15.0	-	-	+15.0
Total Changes	+15.0	-	-	+15.0
Current Estimate	74.1	-	-	74.1

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LPD 17 Class, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	61.1	0.0	0.0	61.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	4.6	-	-	+4.6
Engineering	3.5	-	-	+3.5
Estimating	5.7	-	-	+5.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.8	-	-	+13.8
Total Changes	+13.8	-	-	+13.8
Current Estimate	74.9	-	-	74.9

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised escalation indices. (Economic)	N/A	+0.2
Revised lead ship award schedule (FY96 to FY98) (Schedule)	+4.6	+5.4
Combat System Upgrade (Engineering)	+3.5	+3.5
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1

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LPD 17 Class, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Continued Design Optimization (Estimating)	+6.1	+6.3
Returned Cost Adjustments (Estimating)	-0.3	-0.3
RDTE Subtotal	+13.8	+15.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. (U) Contract Information: None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 42.9% (6 yrs/14 yrs)

(2) Percent Program Cost Appropriated: 72.3% (\$53.6 / \$74.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2003)</u>	<u>Total</u>
RDTE	53.6	5.5	7.4	7.6	74.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	53.6	5.5	7.4	7.6	74.1

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- tated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				0.6	0.5	0.5	0.5	4.0
1991				5.5	4.9	4.9	4.9	4.3
1992				1.3	1.2	1.2	1.2	2.8
1993				10.9	10.3	10.3	9.9	2.7
1994				27.5	26.5	24.6	13.2	2.0
1995				10.3	10.2	2.5		2.7
1996				5.4	5.5			3.0
1997				7.0	7.4			3.0
1998				0.7	0.8			3.0
1999				0.5	0.6			3.0
2000				2.3	2.6			3.0
2001								3.0
2002				0.8	1.0			3.0
2003				2.1	2.6			3.0
Subtot				74.9	74.1	44.0	29.7	
Grand Total				74.9	74.1	44.0	29.7	

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LPD 17 Class, December 31, 1994

17. (U) Production Rate Data:

- a. (U) Production Baseline Rate --
N/A for Pre-Milestone II programs.
- b. (U) Production Rate Variances --
N/A for Pre-Milestone III programs.
- c. (U) Deliveries (Plan/Actual) -- None.
- d. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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74-37

A-11 CSSCS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A) 823)

PROGRAM: CSSCS

AS OF DATE: December 31, 1994

No SECURITY CLASSIFICATION
to PUBLIC RELEASE

17 MAR 1995
see R. L. Linder
SECURITY REVIEW, ODCSINT, HQDA

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OSD/FAI)
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	COL JAMES R. STEVERSON
ATTN: SFAE-CC-CSS	Assigned: July 30, 1990
6020 MEADE ROAD	AV 656-5312 COMM (703) 806-5312
FT BELVOIR, VA 22060-5259	

4. Program Elements/Procurement Line Items:

RDT&E:
PE 63805 (Shared) Project D091, D2GT

PROCUREMENT:
APPN 2035 ICN W34600 (Army)
APPN 2035 ICN BS9706 (Army)

5. Related Programs:

CSSCS is an integral part of the Army Tactical Command and Control System (ATCCS). 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 (CHS), and Standard Integrated Command Post Systems (SICPS).

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DATE: 11/11/95 95-C-0719

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CSSCS, December 31, 1994

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, personnel, medical, and financial 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 evaluate CSS information with respect to the maneuver commander's course of action.

The CSSCS also provides CSS Commanders and their staffs with automated C2 capabilities, including 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 include ATCCS common hardware, ATCCS Common Software, 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 to more effectively manage resources to support the maneuver commander's scheme of operation.

7. Program Highlights:

a. Significant Historical Developments --

Program Executive Officer Command and Control Systems (PEO CCS) chartered the Combat Service Support Control System (CSSCS) Project Management Office on 22 February 1988 to support decisions on the employment of resources and to communicate these decisions to support elements. In FY89, the CSSCS program was designated a Major Defense Acquisition Program. CSSCS was approved for Engineering and Manufacturing Development by the Army Systems Acquisition Review Council (ASARC) 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. The CSSCS Version 3, Build 0 software testing was completed and accepted by the government in February 1992 on schedule. The CSSCS Version 3 Critical Design Review (CDR) was held at TRW during June 1992 and confirmed that the software was sound and ready for the Early User

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7a. Program Highlights (Cont'd):

Test and Experimentation (EUT&E). During September-October 1992, the CSSCS EUT&E was successfully held and demonstrated that the system was easily learned, user friendly, and provided meaningful logistics data which assisted the commander in assessing the sustainability and supportability of combat operations. In April and June 1993, the Army decided at ATCCS Operational Test Readiness Reviews (OTRRs) to delay the CSSCS Initial Operational Test and Evaluation (IOT&E) by more than 6 months until the fourth quarter FY94 and to conduct a Limited User Test (LUT) in the last quarter of FY93. An Enhanced Program Stability Panel met on 23 August 1993 to review the Acquisition Program Baseline (APB) breach as well as the overall CSSCS acquisition strategy. The panel concluded that the postponement of the IOT&E and introduction of the LUT were justified as prudent management actions. The panel also requested a validation of the CSSCS life cycle costs, and following validation, a revised APB was submitted to HQDA in December 1993. During the first quarter of FY94, the CSSCS LUT was held after the completion of training activities of III Corps soldiers. The LUT was concluded with the successful completion of III Corps' Phantom Sabre in November 1993. The CSSCS cost estimate crosswalk was validated by CECOM, approved by PEO CCS and submitted to HQDA in December 1993. The Army Acquisition Executive (AAE) approved the revised APB on 22 February 1994.

b. Significant Developments Since Last Report --

On 14 March 1994, in preparation for Systems Confidence Demonstration (SCD) 3, release 2 of the CSSCS Version 3 software was completed and sent to the ATCCS Experimental Site (AES). Release 2 was also sent to Ft. Huachuca, Ft Hood, Ft Lee, Ft Monmouth and Ft Belvoir to allow the staff to become familiar with it. Following the completion of SCD 3, an additional software release was completed incorporating all post SCD 3 fixes, prior to the start of the CSSCS IOT&E. Training of New Equipment Training (NET) instructors began at Ft Hood on 7 March 1994 using Non-Commissioned Officers (NCOs) from the Battle Command Training Team (BCTT) as well as trainers from Central Texas University (CTU) in Killeen. On 1 April 1994, forwarded the redesignated Revision 3, Change 8, Update 3 to the CSSCS TEMP. The changes reflected the latest revision to Critical Operational Issues and Criteria (COIC) and the TRADOC approved waiver of full implementation of Embedded Training at IOT&E. Formal training to support the IOT&E began on 9 May 1994 with a total of 75 students completing the first three week operator/maintainer course on 27 May 94. The class consisted of 57 Test and Experimentation Command (TEXCOM) data collectors, 15 III Corps soldiers, and one each from Combined Arms Support Command (CASCOM), TRW (FAADC2I) and Common ATCCS Task Training. A successful demonstration was held at the AUSA Symposium in San Jose, CA from 22 to 26 May 1994. The TEMP was approved by the Director, Test and Evaluation on 23 May 94 and by the

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CSSCS, December 31, 1994

7b. Program Highlights (Cont'd):

Director, Operational Test and Evaluation on 3 June 94. The first ASARC Ad Hoc Working Group met on 21 June 94 to begin preparations for the CSSCS Milestone III production decision. During July 1994, the CSSCS Cost Analysis Requirements Description (CARD) document was provided to the US Army Cost and Economic Analysis Center (CEAC) for approval prior to the ASARC III decision. During July 1994, CSSCS updated the draft Material Fielding Plan to reflect current strategy and initial fielding capabilities for staffing externally in August 1994. A shortfall in FORSCOM and TRADOC provided observer collector (OC) requirements (04s with division or corps CSS staff experience) delayed the start of the pilot phase of the IOT&E by a week. Completed the eight day pilot phase with CSSCS arrayed in a Division/Corps arrangement with 8 division nodes and 7 corps level nodes. This required using 26 CSSCS systems communicating between nodes via Local Area Network (LAN), Single Command Ground and Air Radio System (SINCGARS), Mobile Subscriber Equipment (MSE) and wire. Both the use of tactical power and units participating in MOPP-4 operations received positive ratings from the testers. At the end of the pilot phase, TEXCOM began the control phase of the IOT&E which continued until the conclusion of the III Corps Run Runner Field Training Exercise (FTX) on 16 September 1994. With the completion of the IOT&E, TEXCOM is preparing the test report for the ASARC with an expected release of February 1995. CSSCS also participated in the second phase of the ATCCS Integrated Interoperability Demonstration Experiment (IIIDE) at Ft Lewis. This experiment successfully demonstrated the exchange of information with the other four ATCCS nodes using free text messages, United States Message Text Format (USMTF) messages, exchange of pictures using frame grabber and connecting remotely to MCS Version 12 prototype. To achieve truly seamless command and control automated information systems that interoperate with joint structures, the Army is consolidating PM CSSCS with PM Army WWMCS Information Systems (AWIS) and PM Strategic Tactical Army Command and Control System (STACCS). During August 1994, staff members from CSSCS met with AWIS and STACCS to prepare the Request for Proposals (RFP) for the new Army Global Command and Control System (AGCCS) which resulted in a contract award in December 1994. The CSSCS CARD was approved on 6 December 1994. The Director of Requirements, Assistant Deputy Chief of Staff for Operations and Plans Force Development (ADCOPS-FD), was briefed concerning the CSSCS Required Operational Concept (ROC) to Operational Requirements Document (ORD) conversion with the purpose to crosswalk the ROC requirements to the new ORD and to obtain ODCOPS approval. The ADCOPS-FD, approved the CSSCS ORD on 9 December 1994.

The CSSCS system is expected to satisfy mission requirements.

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CSSCS, December 31, 1994

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 22 February 1994 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
SRS 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	OCT 92	OCT 92
Tech Test Version 3			
Start	NOV 92	APR 93	APR 93
Complete	JAN 93	JAN 94	JAN 94
Begin Version 4	MAR 93	JUL 94	DEC 94 (Ch-1)
LUT			
Start	N/A	SEP 93	SEP 93
Complete	N/A	NOV 93	NOV 93
IOT&E Version 3			
Start	FEB 93	JUL 94	JUL 94
Complete	APR 93	SEP 94	SEP 94
Milestone III (ASARC)	AUG 93	MAR 95	APR 95 (Ch-1)
OSD C3I Committee Review	SEP 93	MAR 95	APR 95 (Ch-1)
Begin Version 3 Fielding	APR 94	MAR 95	APR 95 (Ch-1)
First Unit Equipped	APR 93	MAR 95	APR 95 (Ch-1)
IOC Version 3	APR 94	JUL 95	AUG 95 (Ch-1)
SRS Version 4	N/A	SEP 94	MAR 95 (Ch-1)
PDR Version 4	SEP 93	JUL 95	JUL 95
CDR Version 4	DEC 93	SEP 95	SEP 95
Dev Contract Award Version 5	MAR 95	N/A	N/A
Begin Version 5 Development	N/A	SEP 96	SEP 96
Tech Test Version 4			
Start	MAY 95	MAY 96	MAY 96

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Complete	JUN 95	JUN 96	JUN 96
FOT&E Version 4			
Start	AUG 95	JUL 96	JUL 96
Complete	OCT 95	AUG 96	AUG 96
PEO IPR - VERSION 4	N/A	SEP 96	SEP 96
Begin Fielding Version 4	NOV 95	OCT 96	OCT 96
PDR Version 5	JUL 96	DEC 96	DEC 96
CDR Version 5	DEC 96	MAR 97	MAR 97
Tech Test Version 5			
Start	JUN 97	MAR 97	MAR 97
Complete	JUL 97	APR 97	APR 97
FOT&E Version 5			
Start	AUG 97	MAY 97	MAY 97
Complete	OCT 97	JUL 97	JUL 97
PEO IPR - VERSION 5	N/A	SEP 97	SEP 97
Begin Fielding Version 5	NOV 97	OCT 97	OCT 97
Complete Fielding CSSCS	SEP 01	N/A	N/A
EUT&E Version 3			
Start	N/A	N/A	SEP 92
End	N/A	N/A	OCT 92
FOT&E VERSION 3	N/A	N/A	NOV 95 (Ch-1)

(ROC) Required Operational Concept
 (SDR) System Design Review
 (SRS) Software Requirements Specification
 (PDR) Preliminary Design Review
 (CDR) Critical Design Review
 (IOT&E) Initial Operational Test and Evaluation
 (EUT&E) Early User Test and Experimentation
 (FOT&E) Follow-on Operational Test and Evaluation
 (LUT) Limited User Test
 (PEO-IPR) Program Executive Officer In-Progress Review

b. Previous Change Explanations --

The CSSCS IOT&E was rescheduled to the July-September 1994 time period with a Limited User Test (LUT) held in the September-November 1993 time period based on the Army's decision to delay IOT&E. The major drivers behind the decision to delay IOT&E were: the adjustments to the ATCCS acquisition strategy and the resultant impact on ATCCS Horizontal Interoperability; PM CSSCS, CASCOM and OPTEC-TEXCOM test documentation and planning delays; III Corps' lack of identification of units to participate in testing; delays in

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9b. Schedule (Cont'd):

completing the CSSCS Version 3 software; and the approximately 3 week delay in the start of formal CSSCS Technical Testing. The delay in the IOT&E and other milestones dependent on it resulted in a schedule breach, and a requirement to restructure the CSSCS Acquisition Program Baseline (APB) and to conduct an Enhanced Program Stability Panel Meeting. The panel, which met in August 1993, reviewed the baseline breach as well as the overall CSSCS acquisition strategy, and concluded that postponing the IOT&E and introducing an LUT were justified as prudent management actions. The panel also approved the deletion of the Complete Fielding milestone because of its vulnerability to be continuously breached due to annual budget perturbations. This milestone was deleted in the revised APB submitted to HQDA in December 1993. Changes to the schedule in 1993 were due to the revised APB submitted in response to the schedule breach. The new APB was approved on 22 February 1994.

c. Current Change Explanations --

(Ch-1) Current changes to the PM CSSCS schedule were caused by the consolidation of PM CSSCS with PM AWIS and PM STACCS on 1 Oct 95; and the actual scheduling of the ASARC. Begin Version 4 milestone was moved to match the new consolidated contract award date of December 1994. All of the other milestones were moved based on the ASARC III scheduled date of 3 April 1995. Addition of FOT&E Version 3 milestone is to ensure corrections resulting from the IOT&E are implemented before full fielding.

	From:	To:
Begin Version 4	Jul 94	Dec 94
SRS Version 4	Sep 94	Mar 95
ASARC III	Mar 95	Apr 95
OSD C3I Comm Review	Mar 95	Apr 95
Begin Fielding Version 3	Mar 95	Apr 95
FUE	Mar 95	Apr 95
IOC Version 3	Jul 95	Aug 95
FOT&E Version 3	N/A	Nov 95

d. References --

Development Estimate:

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline dated February 22, 1994.

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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	140	/ 140	TBD	140
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
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

Demonstrated performance characteristics of TBD will be changed to reflect actual test results after the release of the test reports from the CSSCS IOT&E.

* USMTF is the abbreviation for United States Message Text Format.

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10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations --

Operational temperature estimate changed from 0-+120 degrees F to +40-+95 degrees to correct estimate error in previous SAR. The Mean Time Between Operational Mission Failure for the ATCCS CHS & CSSCS Software (HW&SW) changed from 210 hours to 140 hours due to the revision of the Reliability and Maintainability (RAM) Rationale, and was independently verified by the Combined Arms Support Command (CASCOM) and the Army Materiel Systems Analysis Activity (AMSAA).

c. Current Change Explanations -- None.

d. References --

Development Estimate:

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline dated February 22, 1994.

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	128.7	126.4
Procurement	131.6	115.2	88.7
Flyaway	(122.2)		(84.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(9.4)		(3.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 91 Base-Year \$	246.1	243.9	215.1
 Escalation	44.6	49.3	48.7
Development (RDT&E)	(11.5)	(11.0)	(12.2)
Procurement	(33.1)	(38.3)	(36.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	290.7	293.2	263.8

The unit of measure for CSSCS is the number of systems, either Transportable Computer Units (TCU) or Lightweight Computer Units (LCU).

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11b. Total Program Cost and Quantity (Cont'd):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. Quantity --			
Development (RDT&E)	84	115	104
Procurement	<u>1031</u>	<u>1119</u>	<u>1115</u>
Total	1115	1234	1219

An LRIP decision is being coordinated which, when approved, will authorize a quantity of 58.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline dated February 22, 1994.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCB</u> <u>Baseline</u> (FEB 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY91\$)	215.1	243.9	
(2) Quantity	1219	1234	
(3) Unit Cost	0.176	0.198	-10.723
b. Procurement			
(1) Cost (BY91\$)	88.7	115.2	
(2) Quantity	1115	1119	
(3) Unit Cost	0.080	0.103	-22.727

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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	-1.7	+2.7	-	+1.0
Quantity	-	+11.4	-	+11.4
Schedule	-	+22.8	-	+22.8
Engineering	-	-	-	-
Estimating	+16.6	-30.7	-	-14.1
Other	-	-	-	-
Support	-	-5.6	-	-5.6
Subtotal	+14.9	+0.6	-	+15.5
Current Changes:				
Economic	-0.2	-0.8	-	-1.0
Quantity	-	-1.0	-	-1.0
Schedule	-	-4.2	-	-4.2
Engineering	-	-	-	-
Estimating	-2.1	-34.1	-	-36.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.3	-40.1	-	-42.4
Total Changes	+12.6	-39.5	-	-26.9
Current Estimate	138.6	125.2	-	263.8

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	114.5	131.6	0.0	246.1
Previous Changes:				
Quantity	-	+8.3	-	+8.3
Schedule	-	+0.2	-	+0.2
Engineering	-	-	-	-
Estimating	+13.8	-19.7	-	-5.9
Other	-	-	-	-
Support	-	-5.2	-	-5.2
Subtotal	+13.8	-16.4	-	-2.6
Current Changes:				
Quantity	-	-0.6	-	-0.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.9	-25.6	-	-27.5
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	-1.9	-26.5	-	-28.4
Total Changes	+11.9	-42.9	-	-31.0
Current Estimate	126.4	88.7	-	215.1

b. Previous Change Explanations --

RD&E

Economic: Revised escalation indices.
 Estimating: Revision due to PY Reprogrammed funds not included in initial SAR. Decision to procure LCUs with RD&E vs OPA funds for IOT&E.

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change.
 Quantity: Increased units from 1031 to 1102.
 Schedule: Variance associated with Quantity Increase from 1031 to 1102. Change in procurement schedule FY95-FY03.

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13b. Cost Variance Analysis (Cont'd):

Estimating: Decreased estimate due to Funding Profile Changes.

Support: Decreased Initial Spares requirement.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.3
Funding reductions due to revised program development costs. (Estimating)	-2.2	-2.4
RDT&E Subtotal	<u>-1.9</u>	<u>-2.3</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.7
Total Variance associated with decrease in quantity from 1119 to 1115 units.	-0.4	-0.6
Decrease of 4 units from 1119 to 1115 units due to funding constraints. (Quantity)	-0.6	-1.0
Allocation to estimating Variance resulting from Quantity change. (Estimating)	+0.2	+0.4
Change due to reduction of per unit costs allowing the procurement of more units sooner. (Schedule)	--	-4.2
Decrease in per unit cost based on new CHS costs. (Estimating)	-25.8	-34.5
Decreased Initial Spares requirement (Future CHS decrease in per unit cost). (Support)	-0.3	--
Procurement Subtotal	<u>-26.5</u>	<u>-40.1</u>

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.261	--	-0.014	0.015	--	-0.041	--	-0.005	-0.045	0.216

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

CSSCS VERSIONS 3 & 4:
TRW, INC, CARSON, CA
DAAB07-91-C-N501, CPAF
Award: February 1, 1991
Definitized: February 1, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$61.6	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$75.7	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$75.3	\$75.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.8	\$-0.4
Cumulative Variances To Date (11/30/94)	\$0.4	\$-0.3
Net Change	\$1.2	\$0.1

Explanation of Change:

Improvement in the cumulative cost variance was due to the contractor's effort to contain overhead and general/administrative (G&A) rates. Improvement in the schedule variance was due to increased contractor efficiency.

December is month 47 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: 45.0% (9 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 41.1% (\$108.4 / \$263.8)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	102.4	12.4	11.5	12.3	138.6
Procurement	6.0	7.3	7.0	104.9	125.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	108.4	19.7	18.5	117.2	263.8

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY91 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obli- gated</u>	<u>Ex- pended</u>	

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	4.4	4.1
1991			8.9	8.9	9.1	9.1	9.1	4.3
1992			20.5	20.5	21.6	21.6	21.5	3.0
1993			17.2	17.2	18.6	18.6	17.0	2.7
1994			18.7	18.7	20.6	20.6	20.0	2.0
1995			16.0	16.0	18.2	13.3	1.1	2.7

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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			10.6	10.6	12.4			3.0
1997			9.5	9.5	11.5			3.0
1998			4.9	4.9	6.1			3.0
1999			4.8	4.8	6.2			3.0
Subtot	104		126.4	126.4	138.6	97.5	83.0	

Appropriation: 2035 Other Procurement, Army

1995	51		5.1	5.1	6.0	2.2		2.7
1996	53		4.9	6.0	7.3			3.0
1997	51		4.9	5.6	7.0			3.0
1998	50		4.8	5.0	6.4			3.0
1999	56		4.5	4.7	6.3			3.0
2000	145		10.3	11.1	15.1			3.0
2001	145		10.7	10.7	15.1			3.0
2002	137		9.9	9.9	14.4			3.0
2003	150		10.0	10.0	15.0			3.0
2004	90		6.4	7.3	11.2			3.0
2005	79		6.3	6.3	10.0			3.0

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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)

2006	108		7.0	7.0	11.4			3.0
Subtot	1115		84.8	88.7	125.2	2.2		
Grand Total	1219		211.2	215.1	263.8	99.7	83.0	

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RDT&E
Procurement

To Date
104/97
0/0

b. 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

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18a. Operating and Support Costs (Cont'd):

replacement of expendable items (cables, batteries, fuses, and filters). Internal repair of LRUs requiring removal of covers will not be performed by U.S. Army personnel. Units will exchange unserviceable LRUs for serviceable LRUs through assigned Intermediate Direct Support (IDS) facilities. The IDS will perform fault verification and ship unserviceable LRUs 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.

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.

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A-6 ATACMS/BAT

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: ATACMS/BAT

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
ATACMS/BAT

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
HQDA COL Willie B. Nance, Jr.
Program Executive Office Assigned: April 12, 1994
Tactical Missiles, ATTN: SFAE-MSL-AB AV 746-1141 COMM 205-876-1141
RedstoneArsenal, AL 35898-5650

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 20302A (Shared) Project D685 (Shared), D686 (Shared)

PE 63754A Project D600

PE 64754A (Shared) Project D636

PE 64768A Project D641, D687, D2NT, D688, D686

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DAFIS-PA)
DEPARTMENT OF DEFENSE

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 2032 ICN CA6100 (Army)
APPN 2032 ICN CA6105 (Army)
APPN 2032 ICN CA6110 (Army)

5. (U) Related Programs:

Multiple Launch Rocket System (MLRS) and Army Tactical Missile System (Army TACMS)

6. (U) Mission and Description:

The Army TACMS Block II and BAT systems support the Army's deep fires doctrine, which calls for the destruction and/or disruption of threat forces at ranges in excess of 100 kilometers. The BAT is a top attack submunition with acoustic and infrared (IR) seekers working in tandem for autonomous attack of moving armor. The BAT Preplanned Product Improvement (P3I) adds cold, sitting armor, heavy multiple launch rocket systems, and surface to surface missile transporter erector launchers to the target set through seeker and warhead improvements. BAT and BAT P3I submunitions are carried deep into enemy territory by variants of the Army TACMS missile, then dispensed to attack and destroy targets. Being a certified round, both the missile and submunition have a low sustainment cost. The Army TACMS Block II missile, a version of the currently fielded and combat-proven Army TACMS Block I missile, will carry 13 BAT submunitions. The Army TACMS Block IIA missile, an extended range version of the Block II missile, will carry 6 BAT P3I submunitions to ranges in excess of 200 kilometers. The Army TACMS Block II and BAT Programs do not replace another system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The BAT 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 began 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. An EMD contract was awarded 5 Jun 91, to Northrop Corporation. The program was disestablished as a Special Access Program and established as the BAT Project in Jun 91. Subsystem Critical Design Reviews (CDRs) began in Jan 92, with successful completion of the System Integration CDR in May 92. A 2 Nov 92 DAB directed restructure of BAT to a 54-month program to align it with the Tri-Service Standoff Attack Missile (TSSAM) Program. In Dec 92, a successful sled test demonstration of BAT Submunitions in a supersonic environment was completed. During a 12 Feb 93 Joint

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7a. (U) Program Highlights (Cont'd):

Strategic Systems Committee/Conventional Systems Committee (SSC/CSC) Review, direction was given to continue the BAT with reduced quantities and continue the BAT P3I program with Block IIA as the carrier. On 18 Nov 93, the BAT P3I Demonstration/Validation (Phase I) was awarded to Northrop Corporation. The BAT program successfully completed three Design Verification Flight Tests, three Captive Flight Tests, three Suspended Platform Tests, and a Deployable Wing Wind Tunnel Test. Also, acoustic and IR threat vehicle characterization was successfully accomplished. In Nov 93, Army TACMS was designated as the carrier for the BAT submunition which resulted in a second restructure of the BAT EMD contract. The Assistant Secretary of Army, Research, Development and Acquisition, directed the Army to terminate participation in the TSSAM program on 9 Dec 93. The Army TACMS Block II/BAT Program was briefed to the Under Secretary of Defense for Acquisition on 22 Dec 93 and tentative approval was received.

b. (U) Significant Developments Since Last Report --
On 12 Apr 94, the Army TACMS and BAT Project Offices were deactivated and reactivated as the Army TACMS-BAT Project Office. In Jun 94, the Conventional Systems Committee (CSC) recommended that the Army TACMS Block II, Block IIA, BAT, and BAT P3I programs be combined and documented under a single ACAT ID MDAP.

The BAT EMD contract with Northrop-Grumman Corporation was modified to address the change in delivery vehicles to the Army TACMS Block II. A not-to-exceed change order (total value \$535M) was signed 22 Nov 94.

Two successful end-to-end design verification flight tests of the BAT were conducted against a remoted array of tanks and armored personnel carriers in Dec 94. Both submunitions impacted the predicted target vehicles in a vulnerable area, demonstrating acoustic and IR seeker performance.

A letter contract was awarded to Loral Vought Systems for the Army TACMS Block II Phase III Design Study on 29 Apr 94. During this study, the contractor will design, manufacture, and static test both the components and the completed prototype tactical, lateral dispense system for 13 BAT submunitions. In late Nov and early Dec 94, two successful demonstrations of the gas generator and gas bag system that will be utilized in the Block II dispenser were conducted. On 19 Jan 95, the first static ejection test of the prototype tactical dispenser was successfully completed.

A contract option with Northrop-Grumman Corporation was exercised on 21 Dec 94 which covers the Phase II Demonstration and Validation of the BAT P3I submunition.

The Army TACMS Block II/BAT Program is expected to satisfy mission requirements.

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7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are schedule and cost breaches to the Acquisition Program Baseline (APB), dated 13 May 93. A Program Deviation Report and Revised APB have been submitted for approval. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

BAT/BAT P3I

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Prototype Production			
Start	DEC 92	APR 93	APR 93
Complete	SEP 94	SEP 95	SEP 95
Design Verification Test			
Start	JAN 93	MAY 93	MAY 93
Complete	NOV 93	JUL 94	SEP 95 (Ch-1)
First Prototype Unit Delivery	OCT 93	MAR 94	OCT 94 (Ch-1)
Contractor Development Test			
Start	NOV 93	OCT 94	FEB 96 (Ch-1)
Complete	SEP 94	SEP 95	MAR 97 (Ch-1)
Long Lead Program Review	DEC 93	MAY 95	N/A (Ch-1)
Long Lead Contract Award for LRIP	JAN 94	JUN 95	N/A (Ch-1)
LRIP Program Review	NOV 94	OCT 95	DEC 97 (Ch-1)
EMD/LRIP I Contract Award	NOV 94	NOV 95	JAN 98 (Ch-1)
LRIP First Unit Delivery	N/A	NOV 96	JUL 99 (Ch-1)
Submunition Readiness Date (IOC)	DEC 95	FEB 97	NOV 99 (Ch-1)
Milestone III	DEC 96	NOV 98	SEP 00 (Ch-1)
Production Contract Award	JAN 97	JAN 99	FEB 01 (Ch-1)
First Production Unit Delivery	JAN 98	JAN 00	JUL 02 (Ch-1)
BAT P3I			
P3I DEM/VAL	N/A	AUG 93	OCT 93 (Ch-1)
P3I EMD Contract Award	N/A	MAR 97	APR 98 (Ch-1)
Milestone II	N/A	N/A	MAR 98 (Ch-2)
LRIP IPR	N/A	N/A	APR 01 (Ch-2)

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9a. (U) Schedule (Cont'd):
BAT/BAT P3I

(U) Milestones (Cont'd) --

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Milestone III	N/A	N/A	FEB 02(Ch-2)

This schedule breaches the 13 May 93 Acquisition Program Baseline.

b. (U) Previous Change Explanations --

Critical Design Review changed due to delay of subcontractors/ vendors receiving finalized system requirements. Changes were due to restructure of BAT EMD to a 54-month program and the addition of P3I Demonstration/Validation and EMD.

c. (U) Current Change Explanations --

(Ch-1) - Milestones changed due to the BAT program being restructured to align with the new delivery vehicle, Army TACMS Block II, as follows:

MILESTONE	FROM	TO
BAT		
Design Verification Test		
Complete	Jul 94	Sep 95
First Prototype Unit Delivery	Mar 94	Oct 94
Contractor Development Test		
Start	Oct 94	Feb 96
Complete	Sep 95	Mar 97
Long Lead Program Review	May 95	N/A
Long Lead Contract Award for LRIP	Jun 95	N/A
LRIP Program Review	Oct 95	Dec 97
EMD/LRIP I Contract Award	Nov 95	Jan 98
LRIP First Unit Delivery	Nov 96	Jul 99
Submunition Readiness Date (IOC)	Feb 97	Nov 99
Milestone III	Nov 98	Sep 00
Production Contract Award	Jan 99	Feb 01
First Production Unit Delivery	Jan 00	Jul 02
BAT P3I		
P3I DEM/VAL	Aug 93	Oct 93
P3I EMD Contract Award	Mar 97	Apr 98

(Ch-2) - Added milestones reflecting the project's plan of execution for the BAT P3I program as follows:

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9c. (U) Schedule (Cont'd):
BAT/BAT P3I

MILESTONE	FROM	TO
Milestone II	N/A	Mar 98
LRIP IPR	N/A	Mar 01
Milestone III	N/A	Feb 02

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 May 13, 1993.

Army TACMS Blk II/Blk IIA

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
BLOCK II			
DA IPR	MAR 95	N/A	MAR 95 (Ch-1)
Continued Development Contract Award	MAY 95	N/A	MAY 95 (Ch-1)
Preliminary Design Review	MAY 96	N/A	MAY 96 (Ch-1)
Hardware Critical Design Review	FEB 97	N/A	FEB 97 (Ch-1)
Software Critical Design Review	MAY 97	N/A	MAY 97 (Ch-1)
Pre-production Test (PPT)			
Start	MAY 97	N/A	APR 97 (Ch-1)
Complete	NOV 97	N/A	NOV 97 (Ch-1)
Pre-production Qualification Tests (PPQT)			
Start	DEC 97	N/A	DEC 97 (Ch-1)
Complete	JUL 98	N/A	JUL 98 (Ch-1)
EMD OT Option Award	JAN 98	N/A	JAN 98 (Ch-1)
Combined DT/OT Tests			
Start	JUL 98	N/A	JUL 98 (Ch-1)
Complete	DEC 98	N/A	DEC 98 (Ch-1)
PEO LRIP Decision	DEC 98	N/A	DEC 98 (Ch-1)
LRIP Contract Award	JAN 99	N/A	JAN 99 (Ch-1)
Operational Tests (OT)			
Start	DEC 99	N/A	DEC 99 (Ch-1)
Complete	MAR 00	N/A	MAR 00 (Ch-1)
LRIP First Delivery	JUN 00	N/A	JUN 00 (Ch-1)
Milestone III	SEP 00	N/A	SEP 00 (Ch-1)
IOC	SEP 00	N/A	SEP 00 (Ch-1)

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9a. (U) Schedule (Cont'd):

Army TACMS Blk II/Blk IIA

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Organic Support Capability	SEP 00	N/A	SEP 00(Ch-1)
Service Depot Support	SEP 00	N/A	SEP 00(Ch-1)
First Full Rate Production Contract Award	JAN 01	N/A	JAN 01(Ch-1)
BLOCK IIA			
Milestone IV P3I Review	MAR 98	N/A	MAR 98(Ch-1)
EMD Contract Award	APR 98	N/A	APR 98(Ch-1)
Low Rate Initial Production Contract Award	JAN 02	N/A	JAN 02(Ch-1)
Milestone III	FEB 02	N/A	FEB 02(Ch-1)
Organic Support Capability	DEC 03	N/A	DEC 03(Ch-1)
Service Depot Support	DEC 03	N/A	DEC 03(Ch-1)
IOC	MAY 03	N/A	MAY 03(Ch-1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) - Added milestones reflecting the project's plan of execution for the Army TACMS Block II/IIA programs.

d. (U) References --

(U) Development Estimate:

OSD Program Decision Memorandum (PDM), 10 Nov 93, and the FY96 President's Budget, 6 Feb 95.

(U) Approved Program: None.

10. (U) Performance Characteristics:

BAT/BAT P3I

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Weight (lbs)	44	44 / 44	40.64	44
Length (stowed) (ins)	36	36 / 36	36	36
Diameter (stowed) (ins)	5.5	5.5 / 5.5	5.5	5.5

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):
BAT/BAT P3I

<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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(b)(1)

b. (U) Previous Change Explanations --

Kills per launcher load in Army TACMS have been changed to correct the current estimate from the Dec 91 SAR to match the development estimate. Range target data was changed to correct the target nomenclature. Additional penetration was changed because of data obtained from EMD test articles. TSSAM is no longer required for the BAT program; the Army TACMS Block II was designated as the delivery vehicle. Army TACMS kills per launcher load was changed because of recent demonstrations on EMD test articles.

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10c. (U) Performance Characteristics (Cont'd):
BAT/BAT P3I

c. (U) Current Change Explanations --

(b)(1)

(U) (Ch-2) - Performance characteristic "Kills/Launcher Load, Large Cruise" is no longer applicable to the BAT program since Army TACMS Block II is the delivery vehicle.

(U) (Ch-3) - Added performance characteristics for the BAT P3I program.

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 May 13, 1993.

Army TACMS Blk II/Blk IIA

a. (U) Performance --

DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

Army TACMS Blk II/Blk IIA

(b)(1)

Reliability (missile inflight)	.91	N/A	/ N/A	TBD	.91	(Ch-1)
System reliability (prelaunch)	.75	N/A	/ N/A	TBD	.75	(Ch-1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) - Added performance characteristics for the Army TACMS Block II/IIA, BAT delivery vehicle.

d. (U) References --

(U) Development Estimate:

OSD Program Decision Memorandum (PDM), 10 Nov 93, and the FY96 President's Budget, 6 Feb 95.

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10d. (U) Performance Characteristics (Cont'd):
Army TACMS Blk II/Blk IIA

(U) Approved Program: None.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
BAT/BAT P3I

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	702.1	991.6	1174.1
Procurement	1569.9	1134.2	1352.7
Total Flyaway	(1553.6)		(1340.9)
Other Weapons System	(16.3)		(11.8)
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	2272.0	2125.8	2526.8
Escalation	714.6	423.5	740.0
Development (RDT&E)	(29.5)	(68.2)	(130.4)
Procurement	(685.1)	(355.3)	(609.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2986.6	2549.3	3266.8
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>30993</u>	<u>18154</u>	<u>20226</u>
Total	30993	18154	20226

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 May 13, 1993.

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11a. (U) Total Program Cost and Quantity (Cont'd):
Army TACMS Blk II/Blk IIA

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	385.4	0.0	385.4
Procurement	1210.3	0.0	1210.3
Recurring	(1092.3)		(1092.3)
Nonrecurring	(89.6)		(89.6)
Total Flyaway	(1181.9)		(1181.9)
Other Wpn Systems Cost	(22.0)		(22.0)
Peculiar Support	(3.6)		(3.6)
Initial Spares	(2.8)		(2.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	1595.7	0.0	1595.7
 Escalation	 705.4	 0.0	 705.4
Development (RDT&E)	(103.1)	(0.0)	(103.1)
Procurement	(602.3)	(0.0)	(602.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2301.1	0.0	2301.1

b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>1806</u>	<u>N/A</u>	<u>1806</u>
Total	1806	N/A	1806

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

OSD Program Decision Memorandum (PDM), 10 Nov 93, and the FY96 President's Budget, 6 Feb 95.

(U) Approved Program: None.

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12. (U) Unit Cost Summary:

BAT/BAT P3I

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	2526.8	2125.8	
(2) Quantity	20226	18154	
(3) Unit Cost	0.125	0.117	6.687
b. (U) Procurement			
(1) Cost (BY91\$)	1352.7	1134.2	
(2) Quantity	20226	18154	
(3) Unit Cost	0.067	0.062	7.047

Army TACMS Blk II/Blk IIA

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (??? ?? APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	1595.7	0.0	
(2) Quantity	1806		
(3) Unit Cost	0.884	N/A	N/A
b. (U) Procurement			
(1) Cost (BY91\$)	1210.3	0.0	
(2) Quantity	1806		
(3) Unit Cost	0.670	N/A	N/A

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13. (U) Cost Variance Analysis:
BAT/BAT P3I

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	731.6	2255.0	0.0	2986.6
Previous Changes:				
Economic	+1.0	-35.6	-	-34.6
Quantity	-	-678.9	-	-678.9
Schedule	+3.6	+107.6	-	+111.2
Engineering	+280.4	+61.3	-	+341.7
Estimating	+271.0	-21.7	-	+249.3
Other	-	-	-	-
Support	-	+30.7	-	+30.7
Subtotal	+556.0	-536.6	-	+19.4
Current Changes:				
Economic	-2.0	-19.7	-	-21.7
Quantity	-	0.4	-	+0.4
Schedule	-	54.6	-	+54.6
Engineering	-	-	-	-
Estimating	18.9	243.9	-	+262.8
Other	-	-	-	-
Support	-	-35.3	-	-35.3
Subtotal	+16.9	+243.9	-	+260.8
Total Changes	+572.9	-292.7	-	+280.2
Current Estimate	1304.5	1962.3	-	3266.8

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13a. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	702.1	1569.9	0.0	2272.0
Previous Changes:				
Quantity	-	-404.6	-	-404.6
Schedule	-	-0.3	-	-0.3
Engineering	+237.3	+40.0	-	+277.3
Estimating	+220.4	-13.0	-	+207.4
Other	-	-	-	-
Support	-	+18.4	-	+18.4
Subtotal	+457.7	-359.5	-	+98.2
Current Changes:				
Quantity	-	0.2	-	+0.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	14.3	165.0	-	+179.3
Other	-	-	-	-
Support	-	-22.9	-	-22.9
Subtotal	+14.3	+142.3	-	+156.6
Total Changes	+472.0	-217.2	-	+254.8
Current Estimate	1174.1	1352.7	-	2526.8

Note: Previous changes have been adjusted to exclude ATACMS Block II costs which are now reported as a separate end item.

b. (U) Previous Change Explanations --

RDTEE

Economic: Revised escalation indices. Adjustment for negative program change.

Schedule: Rephased development effort for FY 92-FY 96.

Engineering: Increased scope due to restructure and addition of BAT P3I EMD. Refinement of BAT P3I to reallocate integration cost for the carrier.

Estimating: Adjustment for current and prior inflation.
Additional development costs for hardware

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13b. (U) Cost Variance Analysis (Cont'd):

BAT/BAT P3I

integration for the Army TACMS versus the
TSSAM BAT carrier.

Procurement

Economic: Revised escalation indices. Adjustment for negative program change.

Quantity: Decrease of 12839 units from 30993 to 18154. Recategorizing quantity and estimating in Dec 92 SAR. Increase of 2066 units from 18154 to 20220.

Schedule: Revised schedule of submunition procurement from FY 95-FY 96 to FY 03-FY 06. A 1 year delay in start of production from FY 94 to FY 95. Change in the procurement buy schedule.

Engineering: Refined production cost estimate to incorporate BAT P3I into the BAT terminal seeker.

Estimating: Adjustment for current and prior year inflation. Allocation associated with quantity reduction. Changed learning curve assumption based on quantity reduction. Allocation associated with quantity increase. Refined cost based on efficiency in rate of procurement of a larger annual buy quantity for FY 98 - FY01. Reduction of estimate for closeout costs from FY06 to FY 05.

Support: Change in projected engineering data costs. Decrease in support based on reduction of 12839 units. Increase in support based on quantity increase of 2066 units.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDTEE

Revised escalation indices. (Economic)	N/A	-2.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.6	+0.6
Revised estimate for hardware integration. (Estimating)	-18.5	-25.7

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13c. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Additional funds for technical feasibility studies and hardware tests. (Estimating)	+3.6	+4.0
One year schedule slip to incorporate Army TACMS Block II as the BAT carrier. (Estimating)	+28.6	+40.0
RDT&E Subtotal	+14.3	+16.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-21.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.3
Quantity Variance resulting from increase of 6 units from 20220 to 20226. (Quantity)	+0.2	+0.4
Budget reductions required changes in the annual buy profile and an addition of two years. (Schedule)	--	+54.6
Budget reductions resulted in increased cost for learning curve inefficiencies and additional requirements for fixed cost. (Estimating)	+165.0	+243.9
Decreased other weapons systems cost (data and 1st destination transportation) requirements. (Support)	-22.9	-35.3
Procurement Subtotal	+142.3	+243.9

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13a. (U) Cost Variance Analysis (Cont'd):
Army TACMS Blk II/Blk IIA

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	488.5	1812.6	0.0	2301.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	488.5	1812.6	-	2301.1

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ATACMS/BAT, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

Army TACMS Blk II/Blk IIA

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	385.4	1210.3	0.0	1595.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	385.4	1210.3	-	1595.7

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

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ATACMS/BAT, December 31, 1994

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

BAT/BAT P3I

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.096	-0.003	0.019	0.008	0.017	0.025	--	--	0.066	0.162

Army TACMS Blk II/Blk IIA

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.274	--	--	--	--	--	--	--	--	1.274

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) BAT EMD:

Northrop-Grumman Corp., Hawthorne, 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

Target Ceiling Qty
\$534.9 N/A 0

Estimated Price At Completion

Contractor Program Manager
\$561.0 \$561.0

Cost Variance Schedule Variance

Previous Cumulative Variances \$-8.0 \$-5.9

Cumulative Variances To Date (12/31/94) \$0.0 \$0.0

Net Change \$8.0 \$5.9

Explanation of Change:

Cost and schedule variances were set to zero in Dec 94 as part of the restructure of the BAT program with the Army TACMS Block II. The alignment of BAT with Army TACMS Block II has resulted in an extension to the schedule from 54 months to a 73 month contract and

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ATACMS/BAT, December 31, 1994

15. (U) Contract Information (Cont'd):

an increase to the target price. The contract modification reflecting the new target price will be definitized by Apr 95.

(U) <u>BAT P3I DEM/VAL:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop-Grumman Corp., Hawthorne, CA			
DAAH01-93-C-A014, CPIF	\$81.8	N/A	0
Award: October 18, 1993			
Definitized: December 21, 1994			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$81.8	N/A	0	\$81.8	\$81.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	<u>N/A</u>	<u>N/A</u>
Net Change	\$0.0	\$0.0

Explanation of Change: None.

This is the first time this contract has appeared in the SAR.

Phase I awarded in Oct 93 and NTE option for Phase II was awarded Dec 94. Phase II was definitized on 21 Dec 94.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 48.0% (12 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 13.6% (\$754.6 / \$5567.9)

BAT/BAT P3I

- (1) Percent Program Completed: 50.0% (12 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 22.8% (\$744.6 / \$3266.8)

Army TACMS Blk II/Blk IIA

- (1) Percent Program Completed: 7.1% (1 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 0.4% (\$10.0 / \$2301.1)

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ATACMS/BAT, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):

Total Program

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Total Program</u>	<u>Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Balance To</u>	
<u>Appropriation</u>	<u>Years</u>	<u>Year</u>	<u>Year</u>	<u>Complete</u>	<u>Total</u>
	(FY84-95)	(FY96)	(FY97)	(FY98-2008)	
RD&E	754.6	193.3	186.0	659.1	1793.0
Procurement	-	-	-	3774.9	3774.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	754.6	193.3	186.0	4434.0	5567.9

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

BAT/BAT P3I

<u>Appropriation</u>	<u>Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Balance To</u>	
	<u>Years</u>	<u>Year</u>	<u>Year</u>	<u>Complete</u>	<u>Total</u>
	(FY84-95)	(FY96)	(FY97)	(FY98-2007)	
RD&E	744.6	136.5	108.1	315.3	1304.5
Procurement	-	-	-	1962.3	1962.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	744.6	136.5	108.1	2277.6	3266.8

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ATACMS/BAT, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):

Army TACMS Blk II/Blk IIA

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Army TACMS Blk II/Blk IIA

<u>Appropriation</u>	<u>Prior Years (FY95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2008)</u>	<u>Total</u>
RD&E	10.0	56.8	77.9	343.8	488.5
Procurement	-	-	-	1812.6	1812.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	10.0	56.8	77.9	2156.4	2301.1

c. (U) Annual Summary -- BAT/BAT P3I

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1984				5.2	4.2	4.2	4.2	3.8
1985				18.4	15.2	15.2	15.2	3.4
1986				37.8	32.2	32.2	32.2	2.8
1987				34.2	30.0	30.0	30.0	2.7
1988				45.9	41.9	41.9	41.9	3.0
1989				46.3	44.0	44.0	44.0	4.2
1990				40.7	40.1	40.1	40.1	4.1
1991				70.2	71.9	71.9	71.6	4.3

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ATACMS/BAT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
BAT/BAT P3I

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)

1992				115.4	121.1	121.1	120.8	3.0
1993				106.3	114.5	114.5	114.0	2.7
1994				110.5	121.9	111.7	107.7	2.0
1995				94.7	107.6	63.3	22.8	2.7
1996				116.5	136.5			3.0
1997				89.6	108.1			3.0
1998				76.1	94.6			3.0
1999				52.3	67.0			3.0
2000				58.7	77.4			3.0
2001				26.7	36.3			3.0
2002				28.6	40.0			3.0
Subtot				1174.1	1304.5	690.1	644.5	

Expenditures and obligations as of 21 Feb 95.

Appropriation: 2032 Missile Procurement, Army

1998	547	22.6	76.6	100.5	127.4			3.0
1999	576	12.2	72.6	86.0	112.2			3.0
2000	1747		136.2	139.5	187.5			3.0

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ATACMS/BAT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
BAT/BAT P3I

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)

2001	2084	7.4	137.7	147.7	204.6			3.0
2002	2241		185.7	187.1	266.9			3.0
2003	3042		180.1	180.6	265.3			3.0
2004	3025		165.6	166.1	251.3			3.0
2005	3065		157.3	157.7	245.8			3.0
2006	3899		186.9	181.6	291.6			3.0
2007				5.9	9.7			3.0
Subtot	20226	42.2	1298.7	1352.7	1962.3			
Grand Total	20226	42.2	1298.7	2526.8	3266.8	690.1	644.5	

c. (U) Annual Summary -- Army TACMS Blk II/Blk IIA

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

1995				8.8	10.0	1.1	0.4	2.7
1996				48.5	56.8			3.0

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ATACHS/BAT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
Army TACHS Blk II/Blk IIA

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997				64.6	77.9			3.0
1998				72.1	89.6			3.0
1999				56.9	72.8			3.0
2000				56.8	74.9			3.0
2001				53.4	72.5			3.0
2002				24.3	34.0			3.0
Subtot				385.4	488.5	1.1	0.4	

Expenditures and obligations as of 21 Feb 95.

Appropriation: 2032 Missile Procurement, Army

1999	50	14.4	40.3	59.0	77.0			3.0
2000	100	4.4	70.3	77.8	104.6			3.0
2001	150	4.6	88.3	94.4	130.7			3.0
2002	150	17.6	118.3	140.4	200.3			3.0
2003	300	10.0	173.0	187.7	275.7			3.0
2004	300	9.6	174.0	186.5	282.2			3.0
2005	300	9.4	172.0	184.3	287.2			3.0
2006	300	8.9	170.0	181.8	291.9			3.0

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ATACMS/BAT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Army TACMS Blk II/Blk IIA

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2007	156	4.9	86.1	92.5	152.9			3.0
2008		5.8		5.9	10.1			3.0
Subtot	1806	89.6	1092.3	1210.3	1812.6			
Grand Total	1806	89.6	1092.3	1595.7	2301.1	1.1	0.4	

17. (U) Production Rate Data:

BAT/BAT P3I

a. (U) Deliveries (Plan/Actual) -- None.

b. (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.

Army TACMS Blk II/Blk IIA

a. (U) Deliveries (Plan/Actual) -- None.

b. (U) Approved Design-to-Cost Objective -- N/A.

Design to Cost (DTC) Requirements waived, Memo, SARD-SM, 2 Nov 94, Subject: Request for Waiver of DTC Requirements - Army Tactical Missile System (ATACMS), Block II.

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ATACMS/BAT, December 31, 1994

18. (U) Operating and Support Costs:
BAT/BAT P3I

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. Based on the Level of Repair Analysis (LORA) and the associated Economic Analysis, contractor logistic support (CLS) is planned for the BAT. O&S costs will further solidify with the accelerated aging tests and stockpile reliability flight tests in FY96. There is no antecedent system.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per BAT System	Avg Annual Cost Per Antecedent
DEP MAINTENANCE (28 YRS)	1.4	N/A
MILPERS (15 YRS)	0.6	N/A
STKPILE REL TST (20 YRS)	0.8	N/A
SOFTWARE (20 YRS)	0.7	N/A
Total	3.5	N/A

Contractor support costs are included in depot maintenance costs.

c. (U) Contractor Support Costs -- None.

Army TACMS Blk II/Blk IIA

a. (U) Assumptions and Ground Rules --

Army TACMS Block II will be fired from the modified Multiple Launch Rocket System (MLRS) M270 launcher within the MLRS organizational units. Manning/crew support is provided by the MLRS organizational unit. Army TACMS Block II will be a certified round. Maintenance will be determined on the basis of a Stockpile Reliability Program (SRP). There is no antecedent system.

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ATACMS/BAT, December 31, 1994

18b. (U) Operating and Support Costs (Cont'd):
Army TACMS Blk II/Blk IIA

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Army TACMS Block II	Avg Annual Cost Per Antecedent
Spt/Maintenance (23 Yrs)	0.8	N/A
Software (20 Yrs)	1.1	N/A
Sys Test & Eval (20 Yrs)	3.8	N/A
Sys/Proj Mgt (20 Yrs)	0.6	N/A
Total	6.3	N/A

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: F-14 BLOCK I PROGRAM

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

F-14 BLOCK I STRIKE PROGRAM

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

F-14 PROGRAM OFFICE (PMA-241)	CAPT RICHARD EVERT
TACTICAL AIRCRAFT PROGRAM	Assigned: May 2, 1991
1421 Jefferson Davis Highway	AV 664-2575x5432
Arlington, VA 22243-5120	COMM (703) 604-2575x5432

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0205667N (Shared) Project E1408 (Shared)

PROCUREMENT:

APPN 1506 ICN 0519000000 (Navy) (Shared)

No Security Objection to Open Publication

~~(AS AMENDED)~~

95-C-0316

MAR 21 1995

John G. Andersen
Office of the Chief of

Naval Operations Dept. of the Navy

5. Related Programs:

F-14A/B/D Upgrade and JDAM.

6. Mission and Description:

Beginning in FY 1994, the Navy proposed the \$1.6 billion F-14 Block I Strike Program to enhance the precision strike capability of the carrier airwings. This was to provide a modest capability to 210 F-14A/B/Ds by integrating laser guided weapons and a supporting suite of sensors and subsystems. The Block I Strike Program was subsequently determined to be unaffordable in the current fiscal

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F-14 BLOCK I PROGRAM, December 31, 1994

6. Mission and Description (Cont'd):

environment. The current plan in the FY 1996 President's Budget is to incorporate the JDAM weapon into 251 F-14 aircraft as a cost effective and affordable means of increasing the F-14 contribution to the overall airwing striking power. The Navy is evaluating several alternatives to JDAM via the Cost and Operational Effectiveness Analysis (COEA) process. The COEA is expected to be completed this Spring to support a Milestone IV/II decision in the June/July timeframe. This resultant program will be called the "F-14 Precision Strike program". The F-14 Block I Strike Program does not replace another system.

7. Program Highlights:

a. Significant Historical Developments --

The F-14 Block I Strike Program was reviewed during the 1993 DOD "Bottom-Up" review. The program was to be reviewed/approved at a Milestone IV/II scheduled for the first quarter of FY 1995. An initial SAR was submitted in December 1993.

b. Significant Developments Since Last Report --

The Department of the Navy redefined the Block I Program to integrate a more affordable precision strike capability. A Cost and Operational Effectiveness Analysis (COEA) is being conducted which will assist in determining the final configuration for the F-14 precision strike capability. The restructured program reduces the current estimate below the Major Defense Acquisition Program (MDAP) reporting thresholds. This will be the final SAR for the F-14 Block I Program.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

An acquisition program baseline has not yet been established. There are no Nunn McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>	
Milestone IV/II (Navy Program Decision Meeting)	OCT 95	N/A	TBD	(Ch-1)
NPR (Navy Program Review) Limited Production Approval	DEC 97	N/A	TBD	(Ch-1)
Milestone III (Full Rate Production)	JUL 99	N/A	TBD	(Ch-1)

The above schedule is notional pending approval of the Operational Requirements Document (ORD).

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F-14 BLOCK I PROGRAM, December 31, 1994

9b. Schedule (Cont'd):

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) The proposed schedule milestones are changed to "TBD" as a result of the restructure of F-14 Block I.

d. References --

Planning Estimate:

FY 1996 President's Budget dated 7 February 1995.

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):

a. Cost --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	423.2	0.0	125.6
Procurement	941.1	0.0	49.7
Recurring	(726.7)		(36.2)
Non-recurring	(9.6)		(1.0)
Total Flyaway	(736.3)		(37.2)
Other Weapon System Cost	(146.5)		(10.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(58.3)		(2.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 94 Base-Year \$	1364.3	0.0	175.3

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F-14 BLOCK I PROGRAM, December 31, 1994

11a. Total Program Cost and Quantity (Cont'd):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	242.6	0.0	27.5
Development (RDT&E)	(32.3)	(0.0)	(15.6)
Procurement	(210.3)	(0.0)	(11.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1606.9	0.0	202.8

b. Quantity --

Development (RDT&E)	4	N/A	2
Procurement	<u>210</u>	<u>N/A</u>	<u>251</u>
Total	214	N/A	253

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

FY 1996 President's Budget dated 7 February 1995.

Approved Program: None.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (DEC 94 SAR)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	175.3	0.0	
(2) Quantity	253		
(3) Unit Cost	0.693	N/A	N/A

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F-14 BLOCK I PROGRAM, December 31, 1994

12. Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY94\$)	49.7	0.0	
(2) Quantity	251		
(3) Unit Cost	0.198	N/A	N/A

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F-14 BLOCK I PROGRAM, December 31, 1994

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	455.5	1151.4	0.0	1606.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	1.2	-	+1.2
Quantity	-	255.2	-	+255.2
Schedule	-	27.0	-	+27.0
Engineering	-	-	-	-
Estimating	-314.3	-1132.3	-	-1446.6
Other	-	-	-	-
Support	-	-240.9	-	-240.9
Subtotal	-314.3	-1089.8	-	-1404.1
Total Changes	-314.3	-1089.8	-	-1404.1
Current Estimate	141.2	61.6	-	202.8

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F-14 BLOCK I PROGRAM, December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	423.2	941.1	0.0	1364.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	172.9	-	+172.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-297.6	-872.0	-	-1169.6
Other	-	-	-	-
Support	-	-192.3	-	-192.3
Subtotal	-297.6	-891.4	-	-1189.0
Total Changes	-297.6	-891.4	-	-1189.0
Current Estimate	125.6	49.7	-	175.3

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Adjustment for Current & Prior
Inflation. (Estimating)

+0.1

+0.1

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F-14 BLOCK I PROGRAM, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease in program for restructure of program to integrate only JDAM into F-14A/B/D. (Estimating)	-297.7	-314.4
RDT&E Subtotal	-297.6	-314.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+3.8
Quantity Variance associated with increase of 41 units (Quantity)	+172.9	+255.2
Delay from FY97 to FY 98 for the start of production and change in the annual buy quantities profile. (Schedule)	--	+27.0
Decrease in program estimate resulting from restructure of program to integrate only JDAM into the F-14A/B/D (Estimating)	-872.0	-1132.3
Decrease in estimate for initial spares requirement as result of restructure of program. (Support)	-55.8	-67.8
Change in program support costs estimate resulting from restructure actions. (Support)	-136.5	-173.1
Procurement Subtotal	-891.4	-1089.8

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F-14 BLOCK I PROGRAM, December 31, 1994

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC	Changes								PAUC
(Initial)									(Current)
Est)	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	Est)

7.509	0.005	-0.149	0.107	--	-5.718	--	-0.952	-6.707	0.802

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 18.2% (2 yrs/11 yrs)
- (2) Percent Program Cost Appropriated: 10.4% (\$21.0 / \$202.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	21.0	25.4	25.1	69.7	141.2
Procurement	-	-	1.0	60.6	61.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	21.0	25.4	26.1	130.3	202.8

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F-14 BLOCK I PROGRAM, December 31, 1994

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1994				14.7	15.0	14.5	2.3	2.0
1995				5.7	6.0			2.7
1996				23.5	25.4			3.0
1997				22.6	25.1			3.0
1998				19.9	22.8			3.0
1999				22.0	26.0			3.0
2000				17.2	20.9			3.0
2001								3.0
Subtot	2			125.6	141.2	14.5	2.3	

Appropriation: 1506 Aircraft Procurement, Navy

1997		0.5		0.9	1.0			3.0
1998	8	0.5	1.1	14.9	17.6			3.0
1999	52		7.2	8.1	9.8			3.0
2000	56		9.1	9.2	11.5			3.0
2001	52		5.9	5.0	6.4			3.0
2002	52		6.6	5.8	7.7			3.0

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F-14 BLOCK I PROGRAM, December 31, 1994

16c. Program Funding Summary (Cont'd):

		Flyaway			Total Then-Year \$			
Fiscal		FY94 Dollars		Total				Escl
Year	Qty			Base		Obli	Ex	Rate
		Nonrec	Rec	Year\$	Program	gated	pended	(%)

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2003	31		6.3	4.4	5.8			3.0
2004				1.4	1.8			3.0
Subtot	251	1.0	36.2	49.7	61.6			
Grand								
Total	253	1.0	36.2	175.3	202.8	14.5	2.3	

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. 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.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A) 823)
 PROGRAM: C-130H

AS OF DATE: December 31, 1994

INDEX

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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

COL BEN McCARTER

ROBINS AFB, GA 31098-1647

Assigned: January 10, 1994

AV 468-2322 COMM 912-926-2322

CLEARED
 FOR OPEN PUBLICATION

4. Program Elements/Procurement Line Items:

PROCUREMENT:

APPN 3010 ICN C130H (Air Force)

DIRECTORATE FOR REGION OF INFORMAT
 AND SECURITY REVIEW (OASD-PA)
 DEPARTMENT OF DEFENSE

5. Related Programs:

AFRES C-130H, ANG C-130H, USNR C-130T, USMC KC-130T, ANG LC-130H,
 ANG HC-130H(N) and NSF LC-130H have been Congressionally directed
 "add-on's" since 1978.

SAF/PAS

95-192 - 1

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

- 1 -

OATSD (PA) DFOISR 95-C-8597

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C-130H, December 31, 1994

6. Mission and Description (Cont'd):

the "workhorse of the Air Force".

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 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. Nevertheless, Funding for the Air Combat Command (ACC) C-130H Acquisition program was significantly reduced from FY94 and out. The aircraft procurement was reduced to 16 aircraft from 165. Procurement of the C-130 aircraft and Government Furnished Equipment (GFE) under the five year option contract has proceeded on schedule. The FY92 peculiar equipment contract was awarded in November 1993. However, New aircraft procurement ended with the FY93 acquisition. Support funding in FY94 and FY95 will support previous ACC aircraft, as well as help modernize the existing training systems for these aircraft. Funding for fleet spares remains through FY01.

b. Significant Developments Since Last Report --

The contract for the FY93 peculiar equipment package was signed in May 1994. As of December 31 1994, all 16 ACC aircraft have been delivered.

The C-130H has been removed from the Major Defense Acquisition Program list. This is the final SAR.

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C-130H, December 31, 1994

7b. Program Highlights (Cont'd):

The C-130H program is expected to meet mission requirements.

c. Changes Since As Of Date -- NONE

8. Threshold Breaches:

There are no breaches to the AFAB approved Acquisition Program Baseline (APB) dated 31 Aug 93, and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production Estimate	Approved Program	Current Estimate
Program Initiation	NOV 91	NOV 91	NOV 91
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	OCT 93	NOV 93
First Delivery	OCT 93	OCT 93	NOV 93
Organic Depot Activation	JUL 95	JUL 95	JAN 96 (Ch-1)

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 --

The Program Initiation Milestone was added per the 14 Oct 92 APB. The FY92 peculiar equipment/data contract modification was delayed from Jun 93 to Nov 93 due to rate revisions and proposal updates initiated by Lockheed Aeronautical Systems Company (LASC). Additionally, the first aircraft delivery was delayed two months from Sep 93 to Nov 93 due to delay in the peculiar equipment contract award.

c. Current Change Explanations --

(Ch-1) The organic depot activation date has changed from Jul 95 to Jan 96. Depot activation slipped due to delays in obtaining and processing logistics data that identifies depot requirements. The Determination of organic versus contractor support for Low Power Color Radar (LPCR), Electrical System Upgrade (ESU), Altitude Directional Indicator/Horizontal Situation Indicator (ADI/HSI) subsystems is pending completion of planned upgrades to these subsystems.

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C-130H, December 31, 1994

9d. Schedule (Cont'd):

d. References --

Production Estimate:

FY93 Amended President's Budget dated January 1992.

Approved Program:

AFAB Approved Acquisition Program Baseline dated August 31, 1993.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demon- strated 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	/ 67.73	72.2	72.2
Mission Capable Rate (MC) (%)	84.3	84.3	/ 81.79	84.3	84.3
Mean-Time Between Removal (MTBR) (hrs)	9.83	9.83	/ 5.77	9.83	9.83
Maintenance Man-Hours per Flying Hour (MMH/FH) (hrs)	12.1	12.1	/ 12.13	12.1	12.1
Mean Man-Hours To Repair (MMHTR) (hrs)	5.96	5.96	/ 6.59	5.96	5.96
KTAS - Knots True Air Speed					

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C-130H, December 31, 1994

10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

FY93 Amended President's Budget dated January 1992.

Approved Program:

AFAP Approved Acquisition Program Baseline dated August 31, 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	9.6	0.0	0.0
Procurement	6677.9	604.2	571.1
Airframe	(4867.6)		(331.3)
Engine	(476.9)		(44.2)
Other GFE	(120.6)		(7.6)
ECO	(37.2)		(0.0)
OTHER COSTS			(0.0)
Total Flyaway	(5502.3)		(383.1)
PEC Training Equipment	(266.8)		(14.0)
Data	(123.9)		(43.4)
Mission Support			(8.5)
ICSE			(7.6)
ICS			(22.3)
Total Other Wpn Sys	(390.7)		(95.8)
Peculiar Support	(438.9)		(17.5)
Initial Spares	(346.0)		(74.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 89 Base-Year \$	6687.5	604.2	571.1
Escalation	4614.1	125.7	127.9
Development (RDT&E)	(2.5)	(0.0)	(0.0)
Procurement	(4611.6)	(125.7)	(127.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	11301.6	729.9	699.0

ICS - Interim Contractor Support

ICSE - Initial Common Support Equipment

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C-130H, December 31, 1994

11b. Total Program Cost and Quantity (Cont'd):

	Production Estimate	Approved Program	Current Estimate
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	165	16	16
Total	165	16	16

c. Foreign Military Sales/International Cooperative Programs --
Commitments to date are 4 C-130Hs for Taiwan for a total of
\$146.8M. Reduced from \$188.6M to reflect lower support requirements.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
FY93 Amended President's Budget dated January 1992.

Approved Program:
AFAP Approved Acquisition Program Baseline dated August 31, 1993.

12. Unit Cost Summary:

	Current Estimate (DEC 94 SAR)	UCR Baseline (AUG 93 APB)	Percent Change
a. Total Program			
(1) Cost (BY89\$)	571.1	631.6	
(2) Quantity	16	16	
(3) Unit Cost	35.694	39.475	-9.579
b. Procurement			
(1) Cost (BY89\$)	571.1	604.2	
(2) Quantity	16	16	
(3) Unit Cost	35.694	37.763	-5.478

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C-130H, December 31, 1994

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	-	-40.6	-	-40.6
Quantity	-	-8756.2	-	-8756.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-12.1	-7.6	-	-19.7
Other	-	-	-	-
Support	-	-1751.0	-	-1751.0
Subtotal	-12.1	-10555.4	-	-10567.5
Current Changes:				
Economic	-	2.1	-	+2.1
Quantity	-	-	-	-
Schedule	-	-0.2	-	-0.2
Engineering	-	-	-	-
Estimating	-	-10.9	-	-10.9
Other	-	-	-	-
Support	-	-26.1	-	-26.1
Subtotal	-	-35.1	-	-35.1
Total Changes	-12.1	-10590.5	-	-10602.6
Current Estimate	-	699.0	-	699.0

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C-130H, December 31, 1994

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	-	-5105.6	-	-5105.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.6	-5.2	-	-14.8
Other	-	-	-	-
Support	-	-968.3	-	-968.3
Subtotal	-9.6	-6079.1	-	-6088.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-8.5	-	-8.5
Other	-	-	-	-
Support	-	-19.2	-	-19.2
Subtotal	-	-27.7	-	-27.7
Total Changes	-9.6	-6106.8	-	-6116.4
Current Estimate	-	571.1	-	571.1

b. Previous Change Explanations --

RDT&E

Estimating: RDT&E funding was deleted in the FY94 Amended Presidents Budget

Procurement

Economic: Economic escalation rates were revised; Prior economic adjustment for negative program change
Quantity: Change resulted from prior decrease of 149 units
Estimating: Prior adjustment for current and prior inflation
Support: Prior support adjustment for current and prior inflation; Initial Spares funding was deleted beginning in FY00; Peculiar Equipment Funding was deleted beginning in FY96; Other Weapon Systems

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C-130H, December 31, 1994

13b. Cost Variance Analysis (Cont'd):

funding was reduced due to program cancellation

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised economic escalation indices. (Schedule)	N/A	-0.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.1
Adjustment for Current & Prior Inflation. (Estimating)	-0.7	-0.7
Decrease to flyaway to reflect actual prior year costs. (Estimating)	-7.8	-10.2
Adjustment for Current & Prior Inflation. (Support)	+0.7	+1.0
Decrease due to reduction of funds for two weapon system trainers (Support)	-38.1	-48.3
Increase in data to upgrade to Organizational Maintenance Manual Set (OMMS) technical data system. (Support)	+22.1	+26.8
Decrease for other support elements of cost. (Support)	-3.9	-5.6
Procurement Subtotal	-27.7	-35.1

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
68.5	-2.4	90.6	--	--	-1.9	--	-111.1	-24.8	43.7

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C-130H, December 31, 1994

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --			Initial Contract Price		
4 FY92 C130H AIRCRAFT:			Target	Ceiling	Qty
LOCKHEED AERONAUTICAL SYS, MARIETTA, GA					
F33657-90-C-0071, FFP			\$76.8	N/A	4
Award: December 10, 1991					
Definitized: September 1, 1992					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$76.8	N/A	4	\$76.8	\$76.8	
			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 are not required on FFP contracts.

12 FY92/93 C130 AIRCRAFT:			Initial Contract Price		
LOCKHEED AERONAUTICAL SYS, MARIETTA, GA			Target	Ceiling	Qty
F33657-90-C-0071, FFP			\$241.2	N/A	12
Award: December 10, 1991					
Definitized: April 1, 1993					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$241.2	N/A	12	\$241.2	\$241.2	
			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 are not required on FFP contracts.

PECULIAR EQUIPMENT PKG.:			Initial Contract Price		
LOCKHEED AERONAUTICAL SYS, MARIETTA, GA			Target	Ceiling	Qty
F33657-90-C-0071, FFP			\$32.1	N/A	8
Award: December 10, 1991					
Definitized: November 10, 1993					

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C-130H, December 31, 1994

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$32.1	N/A	8	\$32.1	\$32.1

	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 are not required on FFP contracts.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 50.0% (4 yrs/8 yrs)

(2) Percent Program Cost Appropriated: 91.7% (\$641.1 / \$699.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY92-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-99)	Total
RDT&E	-	-	-	-	-
Procurement	641.1	11.8	13.6	32.5	699.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	641.1	11.8	13.6	32.5	699.0

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C-130H, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: RDT&E - All Sources - None.

Appropriation: Procurement - All Sources

1992	8		187.7	216.2	257.5	255.2	205.3	2.8
1993	8		195.4	241.5	293.2	250.9	189.9	2.7
1994				34.8	43.3	9.1	2.0	2.0
1995				36.8	47.1	0.1		2.7
1996				8.9	11.8			3.0
1997				10.0	13.6			3.0
1998				11.9	16.7			3.0
1999				11.0	15.8			3.0
Subtot	16		383.1	571.1	699.0	515.3	397.2	

Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	16		383.1	571.1	699.0	515.3	397.2	
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Appropriation: 3010 Aircraft Procurement, Air Force

1992	8		187.7	216.2	257.5	255.2	205.3	2.8
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C-130H, December 31, 1994

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: 3010 Aircraft Procurement, Air Force (Cont'd)

1993	8		195.4	241.5	293.2	250.9	189.9	2.7
1994				34.8	43.3	9.1	2.0	2.0
1995				36.8	47.1	0.1		2.7
1996				8.9	11.8			3.0
1997				10.0	13.6			3.0
1998				11.9	16.7			3.0
1999				11.0	15.8			3.0
2000								3.0
2001								3.0
Subtot	16		383.1	571.1	699.0	515.3	397.2	
Grand Total	16		383.1	571.1	699.0	515.3	397.2	

Obligations and Expenditures reflect program office records as of
1 Feb 95.

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RDT&E
Procurement

To Date

0/0
16/16

b. Approved Design-to-Cost Objective -- N/A.

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C-130H, December 31, 1994

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The cost shown for Table 18(b) is for an active duty ACC squadron of 16 primary authorized aircraft (PAA) flown at 707 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, aircraft maintenance material, and depot level reparable.

Depot maintenance is the cost to maintain the airframe, engines, support equipment, and software for the system.

Sustaining investment includes 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.

There is no antecedent for this system.

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C-130H, December 31, 1994

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per C-130H Squadron	Avg Annual Cost Per Antecedent
Unit Mission Personnel	27.8	N/A
Unit Level Consumption	16.1	N/A
Depot Maintenance	1.8	N/A
Sustaining Investment	2.7	N/A
Indirect Personnel Spt	5.9	N/A
Acquisition & Training	7.6	N/A
Total	61.9	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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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: F/A-18 E/F

AS OF DATE: December 31, 1994

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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	CAPT JOE DYER
Tactical Aircraft Program	Assigned: January 14, 1995
Washington, DC 20361-1265	AV 222-7954 COMM (793) 692-7954
 4. Program Elements/Procurement Line Items:

RDT&E:	
PE 0204136N	
PROCUREMENT:	
APPN 1506 ICN 014500 (Navy)	
APPN 1506 ICN 060510 (Navy)	
 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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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE
to Open Per [unclear]
(AS [unclear])

95-C-08326

MAR 27 1995

[unclear]

Naval [unclear]

95-C-0852

F/A-18 E/F, December 31, 1994

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 its 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 E&MD contract was awarded July 1992. The E&MD engine and airframe contracts were definitized on 07 December 1992. The Test and Evaluation Master Plan for the F/A-18 E/F was approved 5 May 1992.

The F/A-18 E/F E&MD program 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.

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.

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F/A-18 E/F, December 31, 1994

7a. Program Highlights (Cont'd):

Due to a \$190M FY93 Congressional Funding reduction, First Flight was adjusted from October 1995 to December 1995.

Successfully completed First Engine to Test in May 93 and Airframe Preliminary Design Review in June 93.

The first four test engines had accumulated a total of 550 hours as of 31 December 1993, with no major problems.

The Department of Defense Bottom Up review completed in September 1993 recommended proceeding with the F/A-18 E/F development with an Initial Operational Capability (IOC) of September 2000.

Schedule and cost performance problems with Northrop occurred in August 93. The issue has been addressed and the program is executable within the DAB cost and schedule estimates.

b. Significant Developments Since Last Report --

Successfully completed the Airframe and Engine Critical Design Reviews. The E&MD phase is 46% complete for the McDonnell Douglas airframe, and 60% complete for the General Electric engine. The program is still on track to meet the first flight milestone of December 1995.

The F/A-18 E/F is expected to meet all 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. There are no Nunn McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone IV/II	MAR 92	MAR 92	MAY 92
First Engine to Test	APR 93	APR 93	MAY 93
Preliminary Design Review (Airframe)	APR 93	APR 93	JUN 93
Critical Design Review (Airframe)	JAN 94	JAN 94	JUL 94(Ch-1)
Production Readiness Review (Airframe)	APR 95	APR 95	SEP 95
Preliminary Flight Qualification (Engine)	MAR 95	MAR 95	JUN 95(Ch-1)

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F/A-18 E/F, December 31, 1994

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
First Flight	OCT 95	OCT 95	DEC 95
Long Lead Release for LRIP	DEC 95	DEC 95	MAR 96
Limited Production Qualification (Engine)	OCT 96	OCT 96	OCT 96
LRIP Contract Award	JAN 97	JAN 97	MAR 97
Full Production Qualification (Engine)	OCT 97	OCT 97	OCT 97
LRIP First Delivery	DEC 98	DEC 98	JAN 99
Milestone III	JAN 00	JAN 00	MAR 00
Full Rate Production Contract Award	JAN 00	JAN 00	MAR 00
DT&E			
DT-IIA	OCT 95	OCT 95	NOV 95
DT-IIB	NOV 96	NOV 96	NOV 96
DT-IIC	NOV 97	NOV 97	NOV 97
DT-IID	JUL 98	JUL 98	SEP 98
DT-IIE	OCT 98	OCT 98	OCT 98
IOT&E			
OT-IIA	MAR 97	MAR 97	MAY 97
OT-IIB	DEC 97	DEC 97	FEB 98
OT-IIC	MAR 99	MAR 99	MAY 99
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	APR 03
Navy Support Date	OCT 03	OCT 03	DEC 03
D-Level Maintenance Capability	OCT 03	OCT 03	DEC 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.
Current milestone estimates were updated to reflect the impact of the Congressional funding reduction of \$190M in FY93.

The Critical Design Review (Airframe) was rescheduled from May 94 to

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F/A-18 E/F, December 31, 1994

9b. Schedule (Cont'd):

June 94. The Material Support Date was updated from October 02 to April 03. The Navy Support Date and D-Level Maintenance Capability have been rescheduled from October 03 to December 03. These milestone dates have been updated to reflect current program schedule.

c. Current Change Explanations --

(Ch-1): The Critical Design Review (Airframe) was rescheduled from June 94 to July 94. Successful completion of the CDR was accomplished in July 94. The Preliminary Flight Qualification (Engine) was updated from March 95 to June 95. These milestone dates have been updated to reflect current program schedule.

d. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated June 11, 1992.

10. Performance Characteristics:

a. Performance --

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Deck Spot Factor (F/A-18A/B/C/D -1.2)	1.4	1.4	/ <1.5	TBD	<1.5
Fighter Escort Radius (internal fuel) (Nm)	425	425	/ 410	TBD	425
Interdiction Mission Radius (Nm)					
2 external tanks (retained)	400	400	/ 390	TBD	400
3 external tanks (retained)	450	450	/ 430	TBD	450
Combat Ceiling (max thrust)(ft)	>50000	>50000	/ 50000	TBD	>50000
Carrier Suitability (Tropical Day Conditions)					
Launch: Catapult WOD (C-13 Catapult;TCGW) (kts)	25	25	/ <30	TBD	<30
Recovery: WOD (MK-7 MOD 3) (kts)	10	10	/ <15	TBD	<15
Approach Speed (kts)	140	140	/ <150	TBD	<150

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F/A-18 E/F, December 31, 1994

10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Recovery Payload (lbs)	9000	9000 / 9000	TBD	9,000
Usable Load Factor (Subsonic; Nz) (G's)	+7.5	+7.5 / +7.5	TBD	+7.5
Specific Excess Power (Max Thrust, .9M, 1G, 10kft) (fps)	650	650 / >600	TBD	>600
Acceleration (.8M to 1.2M at 35kft) (sec)	60	60 / <70	TBD	<70
Mean Flight Hours Between Maintenance Actions	0.6	0.6 / 0.5	TBD	0.5
Mean Flight Hours Between Failures 1/ Maintenance Hours	2.0	2.0 / 1.7	TBD	1.7
per flight hour (O&I-Level Unsched)	12.0	12.0 / 15.0	TBD	15.0
Built-In Test (All Avionics) 1/ Fault Detection (%)	75	75 / 65	TBD	65
Fault Isolation (%)	90	90 / 85	TBD	85
False Alarm Rate (%)	30	30 / 45	TBD	45*
Speed (Mach)	.98	.98 / .96	TBD	.96
Fighter Escort Mission Configuration @10,000 ft with Intermediate Rated Thrust				
Empty Weight (lbs)	29950	29950 / 31950	TBD	30564

Note: Interdiction Mission Radius (NM) payload with:
 2 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN
 3 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN and Low Drag
 Pylons

* Under study to establish common definition for hardware/software
 BIT False Indication Rate.

b. Previous Change Explanations --

Fighter Escort Radius, Interdiction Mission Radius and Empty Weight
 (lbs) revised based on most recent program review.

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F/A-18 E/F, December 31, 1994

10c. Performance Characteristics (Cont'd):

c. Current Change Explanations -- None.

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 June 11, 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	4867.8
Procurement	49076.3	49076.3	49320.0
Recurring Flyaway	(36450.2)		(36688.0)
Non-Recurring	(368.1)		(365.2)
Ancillary	(3858.5)		(3928.2)
Total Flyaway	(40676.8)		(40981.4)
Peculiar Support	(4301.9)		(4470.4)
Initial Spares	(4097.6)		(3868.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 90 Base-Year \$	53959.6	53959.6	54187.8
 Escalation	40623.4	40623.4	34966.7
Development (RDT&E)	(949.3)	(949.3)	(935.4)
Procurement	(39674.1)	(39674.1)	(34031.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	94583.0	94583.0	89154.5

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.

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F/A-18 E/F, December 31, 1994

11b. Total Program Cost and Quantity (Cont'd):

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1000</u>	<u>1000</u>	<u>1000</u>
Total	1000	1000	1000

Note: Excludes 7 RDT&E prototypes from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- N/A

e. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated June 11, 1992.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (JUN 92 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY90\$)	54187.8	53959.6	
(2) Quantity	1000	1000	
(3) Unit Cost	54.188	53.960	0.423
b. Procurement			
(1) Cost (BY90\$)	49320.0	49076.3	
(2) Quantity	1000	1000	
(3) Unit Cost	49.320	49.076	0.497

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F/A-18 E/F, December 31, 1994

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	-77.2	-4322.1	-	-4399.3
Quantity	-	-	-	-
Schedule	+104.5	-927.4	-	-822.9
Engineering	-	-	-	-
Estimating	+26.7	-40.1	-	-13.4
Other	-	-	-	-
Support	-	-219.3	-	-219.3
Subtotal	+54.0	-5508.9	-	-5454.9
Current Changes:				
Economic	1.9	-595.5	-	-593.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	432.4	-	+432.4
Estimating	-85.3	-17.4	-	-102.7
Other	-	-	-	-
Support	-	290.3	-	+290.3
Subtotal	-83.4	+109.8	-	+26.4
Total Changes	-29.4	-5399.1	-	-5428.5
Current Estimate	5803.2	83351.3	-	89154.5

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F/A-18 E/F, December 31, 1994

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	+18.7	+40.2	-	+58.9
Engineering	-	-	-	-
Estimating	+25.4	-24.4	-	+1.0
Other	-	-	-	-
Support	-	-160.7	-	-160.7
Subtotal	+44.1	-144.9	-	-100.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	262.4	-	+262.4
Estimating	-59.6	26.4	-	-33.2
Other	-	-	-	-
Support	-	99.8	-	+99.8
Subtotal	-59.6	+388.6	-	+329.0
Total Changes	-15.5	+243.7	-	+228.2
Current Estimate	4867.8	49320.0	-	54187.8

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Revised flight test and aircraft delivery schedule.
Revised schedule due to realignment of program funds.

Estimating: Pre-development effort previously funded under the F/A-18 C/D program. Adjustment for current & prior inflation.

Procurement

Economic: Revised escalation indices. Economic adjustment for negative program change.

Schedule: Aircraft procurement accelerated, quantities

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F/A-18 E/F, December 31, 1994

13b. Cost Variance Analysis (Cont'd):

procured in FY98-99. Change in annual procurement buy profile.
 Estimating: Refinement of a prior current estimate. Change in method used to de-escalate advanced procurement funds.
 Support: Decrease in spares funding. Increase in support funding.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Economic Adjustment for Negative Program Change (Economic)	N/A	+1.9
Revisions due to the FY95 Congressional reduction (-\$70M) and other miscellaneous marks including Small Business Innovative Research (SBIR) program. (Estimating)	-59.6	-85.3
RDT&E Subtotal	<u>-59.6</u>	<u>-83.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	--	-595.5
Addition of Positive Identification System and ATARS. (Engineering)	+262.4	+432.4
Refinement of a prior current estimate. (Estimating)	+36.6	+48.1
Increased support funding due to decreases in total flyaway costs. (Support)	+89.6	+224.8
Adjusted to reflect ancillary variance being moved from below Total Flyaway line (6/92 & 12/92 SAR) to above the Total Flyaway line (12/93 & 12/94 SAR). (Support)	+10.2	+65.5
Adjusted to reflect ancillary variance being moved from below Total Flyaway line (6/92 & 12/92 SAR) to above Total Flyaway line (12/93 & 12/94 SAR). (Estimating)	-10.2	-65.5
Procurement Subtotal	<u>+388.6</u>	<u>+109.8</u>

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F/A-18 E/F, December 31, 1994

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
94.583	-4.993	0.001	-0.823	0.432	-0.116	--	0.071	-5.428	89.155

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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$3879.5	\$0.0	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$4068.3	\$0.0	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$3755.3	\$4456.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-7.3	\$-7.2
Cumulative Variances To Date (11/30/94)	\$5.7	\$-36.8
Net Change	\$13.0	\$-29.6

Explanation of Change:

The net change in the cost variance is due to favorable performance by the prime contractor, MDA, which has been offset by unfavorable performance by the subcontractor NGMAD. MDA has accumulated favorable variances in the Wing, Airframe Integration & Assembly, and Development Test and Evaluation (DT&E) elements while NGMAD performance on the Center and Aft Fuselage has continued to decline. The unfavorable schedule position has declined by \$29.6M. This is primarily due to schedule delays in DT&E, supplier parts, and the center and aft fuselage. Overall, the schedule variance percentage is 2.5% of work scheduled to date and has remained relatively stable over the last year.

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F/A-18 E/F, December 31, 1994

15. Contract Information (Cont'd):

<u>YF414-GE-404 Engine:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
General Electric Company, Lynn, MA	\$773.8	\$0.0	21		
N00019-92-C-0149, CPAF/IF					
Award: July 20, 1992					
Definitized: December 7, 1992					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$773.8	\$0.0	21	\$773.8	\$841.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-7.5	\$-7.2	
Cumulative Variances To Date (11/30/94)			\$-14.2	\$-14.7	
Net Change			\$-6.7	\$-7.5	

Explanation of Change:

Since the last SAR submission, the unfavorable cost variance has increased by \$6.7M. Indirect rate impacts account for over half of this amount and the remainder is associated with additional unplanned work due to engine test failures. The decline in the schedule position reflects the schedule impacts of the engine test failures.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 20.0% (5 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 4.3% (\$3846.6 / \$89154.5)

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F/A-18 E/F, December 31, 1994

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2015)</u>	<u>Total</u>
RDT&E	3846.6	847.3	306.2	803.1	5803.2
Procurement	-	236.9	2324.8	80789.6	83351.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3846.6	1084.2	2631.0	81592.7	89154.5

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Oblig- ated</u>	<u>Ex- pended</u>	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1991				7.5	8.0	8.0	8.0	4.3
1992				320.2	349.9	349.9	349.9	2.8
1993				751.4	842.8	842.2	763.6	2.7
1994				1212.8	1396.7	1391.7	1171.4	2.0
1995				1054.5	1249.2	849.2	0.2	2.7
1996				694.8	847.3			3.0
1997				243.8	306.2			3.0
1998				126.4	163.6			3.0
1999				97.1	129.4			3.0

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F/A-18 E/F, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2000				93.8	128.7			3.0
2001				93.2	131.7			3.0
2002				172.3	249.7			
Subtot				4867.8	5803.2	3441.0	2293.1	

Pre-development effort of \$8.0M in FY91 and \$39.9M in FY92, previously reported as a part of the F/A-18 C/D SAR, is reflected in the RDT&E total. This \$47.9M (TY\$) is not included in the \$4.883B Congressionally mandated funding cap.

Appropriation: 1506 Aircraft Procurement, Navy

1996				189.7	236.9			3.0
1997	12	181.0	1364.6	1807.8	2324.8			3.0
1998	24	236.0	1832.3	2365.0	3132.7			3.0
1999	36	181.4	2103.7	2762.1	3768.5			3.0
2000	36	243.7	1817.1	2754.2	3870.4			3.0
2001	48	228.7	2113.0	2751.3	3982.3			3.0
2002	48	196.4	1969.4	3230.6	4816.3			3.0
2003	48	193.1	1865.3	2657.2	4080.3			3.0
2004	48	190.5	1790.4	2534.7	4009.0			3.0

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F/A-18 E/F, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2005	48	188.3	1733.2	2445.7	3984.2			3.0
2006	48	267.1	1686.0	2499.6	4194.3			3.0
2007	72	268.4	2377.3	3047.0	5266.1			3.0
2008	72	265.4	2307.2	2931.9	5219.3			3.0
2009	72	262.9	2249.2	2842.1	5211.2			3.0
2010	72	260.6	2198.6	2794.0	5276.6			3.0
2011	72	258.6	2156.3	2734.5	5319.0			3.0
2012	72	256.8	2118.9	2680.2	5370.0			3.0
2013	72	255.2	2085.6	2629.8	5427.1			3.0
2014	72	253.7	2055.6	2452.6	5213.2			3.0
2015	28	105.4	864.5	1210.0	2649.1			3.0
Subtot	1000	4293.2	36688.2	49320.0	83351.3			
Grand Total	1000	4293.2	36688.2	54187.8	89154.5	3441.0	2293.1	

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F/A-18 E/F, December 31, 1994

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. 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: 12
 Consumption rate, gallons per hour: 1109.7 POL cost, JP-5 per gallon
 FY90\$: \$0.60

Antecedent 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
 gallon, FY90\$: \$0.60

Date of estimate: January 1995

Source: AIR-4.2 Operating & Support Cost Estimate

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F/A-18E Squadron 12 A/C Squadron	Avg Annual Cost Per F/A-18C Squadron 12 A/C Squadron
Personnel	7.5	6.7
Consumables	10.2	9.7
Depot Maintenance	2.6	2.3
Sustaining Investment	1.7	1.2
Indirect Cost	0.4	0.4
Total	22.4	20.3

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(06A)823)

PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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1. (U) Designation and Nomenclature (Preferred Name):

Navy EHF SATCOM Program (NESP) AN/USC-38(V)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

Space and Naval Warfare Systems

CAPT K.D. Slaght

Command - FMW 176

Assigned: March 11, 1993

2451 Crystal Drive

AV 332-3950 COMM (703) 602-3950

Arlington, VA 22245-5200

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0303109N Project X0728

PROCUREMENT:

APPN 1810 ICN 33321000 (Navy) (Shared)

APPN 1810 ICN 33322000 (Navy) (Shared)

APPN 1810 ICN 33902000 (Navy) (Shared)

APPN 1611 ICN MULTIPLE (Navy)

No Security Objection to Open Publication

(AS AMENDED)

95-C-0328

MAR 27 1995

John L. Andersen

Office of the Chief of

Naval Operations Dept. of the Navy

Classified by: Military System Classification Guide 9/10/93
Declassify on: OADR
Downgrade Instructions:

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Navy EHF SATCOM Prog, December 31, 1994

4. (U) Program Elements/Procurement Line Items (Cont'd):

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 (SATCOM) Program (NESP) AN/USC-38(V) is an anti-jam, low probability of intercept communications terminal designed to accommodate a wide variety of command and control communication applications (i.e., secure voice, teletype, data, and fleet broadcast systems). As the Navy's portion of Milstar, NESP terminals are an essential part of the number one command and control communications system within DOD as identified by the Chief of Naval Operations on 9 Feb 93. The terminal operates within the EHF uplink and Super High Frequency (SHF) downlink radio frequency (RF) spectrums. The terminals are interoperable with Army and Air Force terminals and will operate with Milstar satellites as well as EHF packages on board Ultra High Frequency (UHF) Follow-On (UFO) Satellites 4 - 10 and with the Fleet Satellite (FLTSAT) EHF Packages (FEP) installed on FLTSATs 7 and 8. A medium data rate (MDR) applique is being developed for incorporation into the NESP terminal to allow MDR communications with Milstar II satellites. The NESP terminals will provide vital survivable wartime command and control communications for the National Command Authority, Specified/Unified CINCs, and operational commanders. 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 Full Scale Development (FSD) in 1982; one company was awarded a Firm Fixed Price contract in 1986 for 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) Phase I and OPEVAL Phase II were successfully completed in September 1990 and August 1992, respectively. Navy EHF SATCOM terminals supported Desert Storm operations by providing dedicated Pentagon to Riyadh secure, jam-resistant communication links for USCINCENT via an EHF package on

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Navy EHF SATCOM Prog, December 31, 1994

7a. (U) Program Highlights (Cont'd):

board FITSAT 8. Full Rate Production beginning in FY 93 was approved at a Milestone III decision in April 1993.

(U) The first Milstar satellite was launched on 7 February 1994. A production NESP terminal successfully communicated with an Air Force terminal over the on-orbit Milstar Satellite on 15 February 1994 as part of Milstar System Test (MST)-8000.

b. (U) Significant Developments Since Last Report --

(U) NESP Initial Operational Capability (IOC) was achieved on 29 April 1994.

(U) NESP achieved Service Depot Support capability in February 1994.

Overall Organic Support capability was also accomplished with the achievement of Organic Depot Support capability in February 1994 and the prior achievement of Organic Supply Support in March 1993.

(U) NESP terminals were certified as participants in the Dedicated Asset Test (DAT) portion of the Milstar Initial Operational Test and Evaluation (IOT&E) on 8 August 1994. This test was completed on 2 September 1994 and all DAT performance requirements were successfully achieved by the NESP terminals.

(U) Also on 8 August 1994, NESP terminals were certified to initiate Follow-on Operational Test and Evaluation (FOT&E). On 14 September 1994 this test was completed with all test objectives successfully achieved. The NESP terminals were determined to be operationally effective and operationally suitable. Full fleet introduction was recommended for the NESP submarine terminal and continued fleet introduction was recommended for NESP ship and shore terminals.

(U) Operational NESP ship and shore terminals and the Milstar satellite were used to support Operation Restore Democracy commencing in September 1994.

(U) On 14 November 1994 a NESP program execution status review was conducted by the Navy Acquisition Executive, Ms. Nora Slatkin. There were no issues raised as a result of this review.

(U) The system is expected to satisfy all current mission requirements.

c. (U) Changes Since As Of Date --

(U) The first Ultra High Frequency (UHF) Follow-On (UFO) satellite with an EHF package, UFO Flight 4, was launched on 28 January 1995. EHF testing will be conducted starting on 27 February 1995 utilizing NESP terminals. NESP terminals will also support UFO Operational

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7c. (U) Program Highlights (Cont'd):

Test (OT-IV).

8. (U) Threshold Breaches:

(U) There are no breaches to the Acquisition Program Baseline dated 24 March 1993.

(U) There are no Nunn-McCurdy Unit Cost breaches to the Acquisition Program Baseline dated 24 March 1993.

9. (U) Schedule:

a. (U) Milestones —

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
First Unit Equipped Start	JAN 93	JAN 93	JAN 93
Service Depot Support Date	FEB 94	FEB 94	FEB 94
Organic Support Capability Date	FEB 94	FEB 94	FEB 94
Initial Operational Capability (Navy)	JAN 94	JAN 94	APR 94
FOT&E	MAR 94	MAR 94	AUG 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

b. (U) Previous Change Explanations —

(U) Due to redefinition of terminal quantities resulting from force restructure (CNO memo of 13 Jan 93), Milestone III was delayed from December 1992 to April 1993.

(U) "Recompete RFP Release" was replaced with "Follow-on Procurement RFP Release."

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Navy EHF SATCOM Prog, December 31, 1994

9b. (U) Schedule (Cont'd):

(U) Initial Operational Capability (IOC) was changed from January 1994 to April 1994 due to platform installation availability rescheduling.

(U) Follow-on Operational Test and Evaluation (FOT&E) was rescheduled from March 1994 to August 1994 to coincide with the first period of Milstar System Initial Operational Test and Evaluation (IOT&E).

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------------------	------------	---	------------------------------------	-----------------------------

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)			

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Navy EHF SATCOM Prog, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	RdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

Acronyms:

bps - bits per second

cal - calories

cm - centimeters

CEVR - Circular Equivalent Vulnerability Radius

dBi - logarithmic ratio of directional power relative to a spherical (isotropic) radio frequency radiator

dBW - logarithmic ratio relative to one watt

EIRP - effective isotropic radiated power

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10a. (U) Performance Characteristics (Cont'd):

G/T - antenna receive gain/temperature of receive system (figure of merit)

nmi - nautical miles

sec - seconds

rads(si)/sec - radiation dose (square inches)/second

sv - secure voice

TTY - Teletype

hrs - hours

FLTBCAST - Fleet Broadcast

b. (U) Previous Change Explanations — None.

c. (U) Current Change Explanations —

The current estimates were updated to reflect actual performance demonstrated during testing. In all cases actual performance exceeded the Approved Program Objective/Threshold.

d. (U) References —

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. (U) Cost —	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	457.4	457.4	470.4
Procurement	1395.2	1395.2	1339.2
Terminals	(991.7)		(987.9)
Other Weapon Sys	(127.9)		(116.0)
Peculiar Support	(40.7)		(40.2)
Initial Spares	(234.9)		(195.1)
Construction (MILCON)	24.0	24.0	7.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	1876.6	1876.6	1817.3
Escalation	497.1	497.1	389.4
Development (RDT&E)	(6.0)	(6.0)	(13.3)
Procurement	(486.3)	(486.3)	(375.2)
Construction (MILCON)	(4.8)	(4.8)	(0.9)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2373.7	2373.7	2206.7

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11b. (U) Total Program Cost and Quantity (Cont'd):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
b. (U) Quantity —			
Development (RDT&E)	7	7	7
Procurement	386	386	371
Total	393	393	378

Note: RDT&E units are fully configured

[U] A total of 116 units were procured under LRIP, exceeding 10% of total production. Three one-year LRIPs were approved by the Navy Acquisition Executive as the Navy terminal program was ahead of Milstar Satellite schedules as well as Army and Air Force terminal program schedules.

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 March 24, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (MAR 93 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	1817.3	1876.6	
(2) Quantity	378	393	
(3) Unit Cost	4.808	4.775	0.683

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY90\$)	1339.2	1395.2	
(2) Quantity	371	386	
(3) Unit Cost	3.610	3.615	-0.133

(U) None.

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19. (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	+0.7	-45.7	-0.2	-45.2
Quantity	-	-17.2	-	-17.2
Schedule	+7.6	+19.5	-	+27.1
Engineering	-	+9.1	-	+9.1
Estimating	-0.4	+4.1	+0.8	+4.5
Other	-	-	-	-
Support	-	-2.7	-15.3	-18.0
Subtotal	+7.9	-32.9	-14.7	-39.7
Current Changes:				
Economic	-0.8	-25.1	-0.4	-26.3
Quantity	-	-12.5	-	-12.5
Schedule	-	3.8	-	+3.8
Engineering	12.8	12.4	-	+25.2
Estimating	0.4	-27.5	-	-27.1
Other	-	-	-	-
Support	-	-85.3	-5.1	-90.4
Subtotal	+12.4	-134.2	-5.5	-127.3
Total Changes	+20.3	-167.1	-20.2	-167.0
Current Estimate	483.7	1714.4	8.6	2206.7

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDTE&E	PROC	MILCON	TOTAL
Production Estimate	457.4	1395.2	24.0	1876.6
Previous Changes:				
Quantity	-	-13.0	-	-13.0
Schedule	+4.1	+13.3	-	+17.4
Engineering	-	+6.2	-	+6.2
Estimating	-	+2.4	+0.5	+2.9
Other	-	-	-	-
Support	-	-2.4	-12.7	-15.1
Subtotal	+4.1	+6.5	-12.2	-1.6
Current Changes:				
Quantity	-	-4.7	-	-4.7
Schedule	-	2.6	-	+2.6
Engineering	8.5	9.0	-	+17.5
Estimating	0.4	-19.6	-	-19.2
Other	-	-	-	-
Support	-	-49.8	-4.1	-53.9
Subtotal	+8.9	-62.5	-4.1	-57.7
Total Changes	+13.0	-56.0	-16.3	-59.3
Current Estimate	470.4	1339.2	7.7	1817.3

b. (U) Previous Change Explanations —

RDTE&E

Economic: Revised inflation indices.
Schedule: Budget reductions delayed development completion of some software modifications.
Estimating: Adjustment for Current and Prior inflation.

Procurement

Economic: Revised inflation indices.
Quantity: Restructured fleet communication requirements defined in February 1994 resulted in 7 fewer terminals.
Schedule: FY 94 President's Budget reductions deferred 10 terminals to outyears. FY 95 procurement budget

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Navy EHF SATCOM Prog, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

adjustments resulted in 4 additional units being procured under the current contract instead of in the outyears as previously planned.

Engineering: Restructured fleet communication requirements defined in February 1994 resulted in 24 more MDR appliques.

Estimating: Revised estimates for production support, ancillary equipment, and spares to reflect the FY 95 cost information. Adjustment for Current and Prior Inflation.

Support: Support changes resulting from the procurement deferral of 10 terminals to outyears.

MILCON

Economic: Revised inflation indices.

Estimating: Revised estimates for planned projects.

Support: FY 95 President's Budget deleted 5 MILCON projects no longer required for shore terminals.

c. (U) Current Change Explanations —

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised inflation rates for FY 96 President's Budget. (Economic)	N/A	-0.8
Funds included in outyears for potential modifications associated with Milstar II. (Engineering)	+8.5	+12.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
RDT&E Subtotal	+8.9	+12.4
(2) <u>Procurement</u>		
Revised inflation rates for FY 96 President's Budget. (Economic)	N/A	-25.1
Adjustment for Current and Prior Inflation. (Estimating)	+5.2	+6.0
Decommissioning of 2 submarines resulted in requirement for 2 fewer terminals, associated hardware, and installation. (Quantity)	-4.7	-12.5

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Production completion stretchout over 7 years versus 3 years resulting in lower annual quantities and production inefficiencies. (Schedule)	+2.6	+3.8
Production of emergent requirements as well as inclusion of Navy EHF Communications Controller First Article Test. (Engineering)	+9.0	+12.4
Revised unit prices for follow-on buy due to acquisition reform and increased reliance on COTS/GOTS. (Estimating)	-24.8	-33.5
Support decreases due to quantity and schedule changes, reduction of 6 support systems, and revised spares requirements based on historical data. (Support)	-49.8	-85.3
Procurement Subtotal	-62.5	-134.2
(3) MILCON		
Revised inflation rates for FY 96 President's Budget. (Economic)	N/A	-0.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.3
Deletion of two MILCON projects no longer required for shore terminal installation. (Support)	-4.1	-5.1
MILCON Subtotal	-4.1	-5.5

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.040	-0.189	0.161	0.082	0.091	-0.060	—	-0.287	-0.202	5.838

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Navy EHF SATCOM Prog, December 31, 1994

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement —

(U) <u>EHF Terminals:</u>	<u>Target</u>	<u>Initial Contract Price</u> <u>Ceiling</u>	<u>Qty</u>
RAYTHEON COMPANY, MARLBOROUGH, MA			
N00039-82-C-0146, FFP Mod	\$83.7	N/A	24
Award: February 14, 1990			
Definitized: February 14, 1990			

<u>Current Contract Price</u>	<u>Estimated Price At Completion</u>
<u>Target</u> <u>Ceiling</u> <u>Qty</u>	<u>Contractor</u> <u>Program Manager</u>
\$378.7 N/A 244	\$416.1 \$416.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) The Estimated Price At Completion includes Engineering Change Proposals (ECPs) currently in process and contract options established to procure additional terminals which are included in FY 96 and FY 97 in the FY 96 President's Budget.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status —

- (1) Percent Program Completed: 56.0% (14 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 49.4% (\$1090.2 / \$2206.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY82-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2006)	<u>Total</u>
RD&E	353.2	14.4	18.0	98.1	483.7
Procurement	728.4	65.2	99.3	821.5	1714.4
MILCON	8.6	-	-	-	8.6
O&M	-	-	-	-	-
Total	1090.2	79.6	117.3	919.6	2206.7

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Navy EHF SATCOM Prog, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary —

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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	20.3	4.0
1991				16.2	17.2	17.2	17.2	4.3
1992				30.3	33.1	33.1	33.1	2.8
1993				23.1	25.9	25.9	22.5	2.7
1994				12.7	14.5	14.3	11.0	2.0
1995				16.8	19.8	16.9	2.4	2.7
1996				11.9	14.4			3.0
1997				14.4	18.0			3.0
1998				18.3	23.5			3.0

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Navy EHF SATCOM Prog, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1999				19.3	25.6			3.0
2000				18.7	25.5			3.0
2001				16.7	23.5			3.0
Subtot	7			470.4	483.7	350.1	328.9	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1990	3		6.6	4.0	4.3	4.3	4.3	1.1
1991	1		2.0	1.2	1.3	1.3	1.3	1.6
1992	1		2.2	2.0	2.3	2.3	1.7	2.5
1993	9		19.6	11.9	13.9	13.6	6.4	3.2
1994	7		14.9	11.3	13.6	13.1	3.4	4.1
1995				4.7	5.8	3.0	1.1	2.7
1996				6.6	8.4			3.0
1997				3.6	4.7			3.0
Subtot	21		45.3	45.3	54.3	37.6	18.2	

(U) "Flyaway" costs include installation amounts in the year in which the equipment is procured. "Total Base Year" and "Total Then Year" costs reflect installation in the year in which funds are budgeted.

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1810 Other Procurement, Navy

1989		4.3	4.4	8.8	9.1	9.1	9.1	4.2
1990	21	17.4	44.6	119.1	127.5	127.5	127.5	4.0
1991	37	2.8	71.4	98.1	106.9	106.9	106.9	4.3
1992	53	1.8	118.8	136.6	154.0	154.0	137.2	2.8
1993	54	1.0	105.5	110.7	126.7	120.8	72.3	2.7
1994	58	0.4	124.3	91.3	107.3	104.4	34.0	2.0
1995			0.9	46.1	55.7	17.7	3.3	2.7
1996	10		23.2	45.6	56.8			3.0
1997	22	7.8	46.8	73.7	94.6			3.0
1998	10	7.2	32.2	40.8	53.9			3.0
1999	33	1.8	92.1	97.6	132.8			3.0
2000	22	1.0	61.7	87.9	123.3			3.0
2001	5		27.9	64.7	93.4			3.0
2002	25		88.0	114.4	170.2			3.0
2003			30.1	76.9	117.8			3.0
2004			22.8	55.6	87.8			3.0
2005			2.4	24.4	39.6			3.0
2006				1.6	2.7			3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

Subtot	350	45.5	897.1	1293.9	1660.1	640.4	490.3	
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(U) "Flyaway" costs include installation in the year in which equipment is procured. "Total Base Year" and "Program" costs reflect installation in the year in which funds are budgeted. Also, "Flyaway Rec" numbers include production of Pre-Planned Product Improvements (P3I) such as MDR upgrades for retrofit into NESF terminals in the year in which the funds are budgeted.

Appropriation: 1205 Military Construction, Navy

1992				7.7	8.6	6.0	4.9	2.8
Subtot				7.7	8.6	6.0	4.9	
Grand Total	378	45.5	942.4	1817.3	2206.7	1034.1	842.3	

(U) FY 96 President's Budget deleted two FY 98 MILCON projects which are no longer required for NESF shore terminal installation.

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) —	<u>To Date</u>
RDT&E	7/7
Procurement	100/100

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17b. (U) Production Rate Data (Cont'd):

b. (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	2.650	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 1982 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:

a. (U) Assumptions and Ground Rules —

(U) 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 232 Ship, 70 Submarine, 60 Shore, 6 Training, and 3 Support terminals.

(U) 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 costs, (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.

(U) Source of data: Program Life Cycle Cost Estimate (PLOCCE) prepared for MS III approval decision granted April 1993.

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18b. (U) Operating and Support Costs (Cont'd):

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.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: THAAD System

AS OF DATE: December 31, 1994

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1. (U) **Designation and Nomenclature (Preferred Name):**
Theater High Altitude Area Defense (THAAD) System, formerly
Upper Tier Theater Missile Defense System (UTTMDS)
2. (U) **DoD Component:** OSD
3. (U) **Responsible Office and Telephone Number:**

Ballistic Missile Defense	LTG Malcolm O'Neill
Organization, The Pentagon	Assigned: February 1, 1993
Washington, DC 20301-7100	AV 225-7060 COMM (703) 695-7060

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FOR OPEN PUBLICATION**

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE**

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4. (U) Program Elements/Procurement Line Items:

RDTE&E:

PE 0603216C (Shared)	Project A2104, A2210, A3354, A3304 (Shared)
PE 0603218C (Shared)	Project A3304
PE 0603861C (Shared)	Project A2260
PE 0604861C (Shared)	Project A2260
PE 0604863C (Shared)	Project A2154
PE 0603862C (Shared)	Project A2154
PE 0604862C (Shared)	Project A2154
PE 0604225C (Shared)	Project A2260, A2154
PE 0604216C (Shared)	Project A2104, A2210

5. (U) Related Programs:

PATRIOT PAC-3

6. (U) Mission and Description:

The Theater High Altitude Area Defense (THAAD) System (formerly 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, THAAD System will make possible the protection of broadly dispersed assets and population centers against TBM attacks. The initial THAAD System architecture consists of the THAAD Program, which uses the Theater Missile Defense - Ground Based Radar (TMD-GBR) as its surveillance and fire control sensor. The THAAD program includes missiles, launchers, BM/C3I units, and support equipment. The THAAD and TMD-GBR Demonstration/Validation (Dem/Val) programs include an option for building a prototype battalion called the User Operational Evaluation System (UOES). This UOES plan entails the building of 40 missiles with 4 launchers, 2 BM/C3I units, 2 TMD-GBRs and support equipment. The UOES will be used for early operational assessment and testing and will also have the potential to be deployed during a national emergency. The THAAD System 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) (now called Ballistic Missile Defense Organization (BMDO)) as a Defense Agency. As a result of the

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7a. (U) Program Highlights (Cont'd):

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 Dem/Val phase of the defense acquisition process, Milestone I. During the President's State of the Union address on January 29, 1991, he directed a refocus of the SDI Program to "...provide protection from limited ballistic missile strikes, whatever their source." On September 12, 1991, an Acquisition Decision Memorandum (ADM) was signed by the Under Secretary of Defense (Acquisition) which authorized six Major Defense Acquisition Programs (MDAPs) for BMDO. These MDAPs were established based on an internal DOD "White Paper" which outlined BMDO's management strategy to USD(A) for these programs. On December 5, 1991 the President signed into law the FY 1992 Defense Authorization Act, which included the Missile Defense Act of 1991. On January 28, 1992, the ADM was signed authorizing Milestone I for UTTMDS. The Dem/Val contracts for THAAD and Family of Radars TMD-GBR were awarded in September 1992, to Lockheed Missile and Space Corporation and Raytheon. A System Design Review (SDR) was successfully completed for the TMD-GBR Dem/Val radar in January 1993.

A TMD-GBR Software Specification Review (SSR) was held in March 1993. The THAAD Initial Design Review was conducted in January 1993.

Theater ballistic missile defense is BMDO's first priority to cope with the dangers of the post-Cold War era. On September 30, 1993 USD(A) issued a cease work on National Missile Defense Ground Based Radar - Testbed (GBR-T) planned for the United States Army Kwajalein Atoll. This change in the GBR-T portion of the contract resulted in increased cost for the remaining TMD GBR contract effort. The following contract milestones were successfully completed: Dem/Val SSR/SDR - January 1993; DEM/VAL System PDR - May 1993; UOES SSR - June 1993; Dem/Val Critical Design Review (CDR) - August 1993; UOES System PDR - September 1993; UOES CDR - December 1993.

b. (U) Significant Developments Since Last Report --

The Under Secretary of Defense for Acquisition and Technology directed in Jan 1994 that the THAAD missile be nuclear hardened in flight. The contract was modified July 1994 to incorporate this effort. Final Design Review Update of the Demonstration/Validation (Dem/Val) design was successfully completed May 1994. The System Integration Lab (SIL), used to verify the readiness of hardware and software and interfaces to support the flight test program, became fully operational. Flight confidence testing began and pre-launch verification hardware (Ground Test Unit - 01 (GTU-01) - a prototype kill vehicle, interim launcher, flight control modules, canister, missile handling material and mass models) arrived at White Sands Missile Range (WSMR) and are being used to prepare for first flight. Subsequent integration, assembly and testing were completed on

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7b. (U) Program Highlights (Cont'd):

GTU-01; then the unit was moved to the launch pad and the system to the range, where integration began. Flight test vehicle-01 arrived at WSMR and integration, assembly and test have begun. Launcher build 1 software and integrated avionics package build 1 software were delivered and are undergoing SIL integration and testing.

Design, development, and production of solid state transmit/receive (T/R) modules constitute the basic building blocks for the GBR program. T/R module accomplishments are: The authority to proceed with fabrication for User Operational Evaluation System (UOES) was released on February 4, 1994; three production lines operational; achieved production of 3,000 per month; Dem/Val production complete (12,500); and yields were higher than expected. The last of the UOES modules are to be delivered by October 1995. The GBR Project Office obtained signatures on an international agreement on Technical Research and Development Projects Memorandum of Understanding on November 18, 1994. This established the groundwork for a US/United Kingdom cooperative endeavor whereby the GBR will benefit from the UK's work on Advanced Digital Beam Forming technologies. In-Plant component and subsystem Testing is underway and Developmental Testing will begin in June 1999.

This THAAD System is expected to satisfy mission requirements.

This is an RDTE-only SAR in accordance with Title 10, United States Code, Section 2432, "Selected Acquisition Reports."

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are currently no Acquisition Program Baseline (APB) (dated February 13, 1995) breaches. Nunn-McCurdy unit cost reporting is not applicable for this pre-Milestone II program.

9. (U) Schedule:

a. (U) Milestones --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Army Concept Definition Studies Complete	MAY 92	MAY 92	MAY 92
Milestone I Review	JAN 92	JAN 92	JAN 92
THAAD Dem/Val Contract Award	JUN 92	JUN 92	SEP 92
GBR Dem/Val Contract Award	JUN 92	SEP 92	SEP 92

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Integrated System Test Start	JUL 95	OCT 95	SEP 95
System Delivery Complete (Less Missiles and Radars)	JUL 96	OCT 96	OCT 96(Ch-1)
Delivery of Optional 40 UOES Missiles Complete	TBD	TBD	TBD
Milestone II DAB Review	JUL 96	OCT 96	OCT 96(Ch-1)
THAAD EMD Contract Award	AUG 96	NOV 96	NOV 96(Ch-1)
GBR EMD Contract Award	AUG 96	NOV 96	NOV 96(Ch-2)
LRIP Review	FEB 99	MAY 99	APR 99
Milestone III DAB Review	JUL 01	OCT 01	OCT 01(Ch-1)
FUE	JUL 01	OCT 01	DEC 01(Ch-3)
IOC	TBD	TBD	TBD

b. (U) Previous Change Explanations --

GBR EMD contract award changed to SEP 96 from NOV 96 to align with RFP release and award goals.

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.

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.

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

c. (U) Current Change Explanations --

(Ch-1) System Delivery Complete (Less Missiles and Radars) changed from SEP 96 to OCT 96 due to the impact of FY 95 funding reduction.

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9c. (U) Schedule (Cont'd):

As a result, Milestone II DAB Review, THAAD EMD Contract Award and Milestone III DAB Review were delayed 1 month.

(Ch-2) GBR EMD Contract Award changed from SEP 96 to NOV 96 due to the impact of the THAAD and TMD-GBR FY 95 funding shortfalls.

(Ch-3) FUE changed from SEP 01 to DEC 01 based on the results of the THAAD missile producibility study which revised the production lead time and production rate buildup.

d. (U) References --

(U) Planning Estimate:

ADM (dated January 28, 1992) Subject: Milestone I Approval.

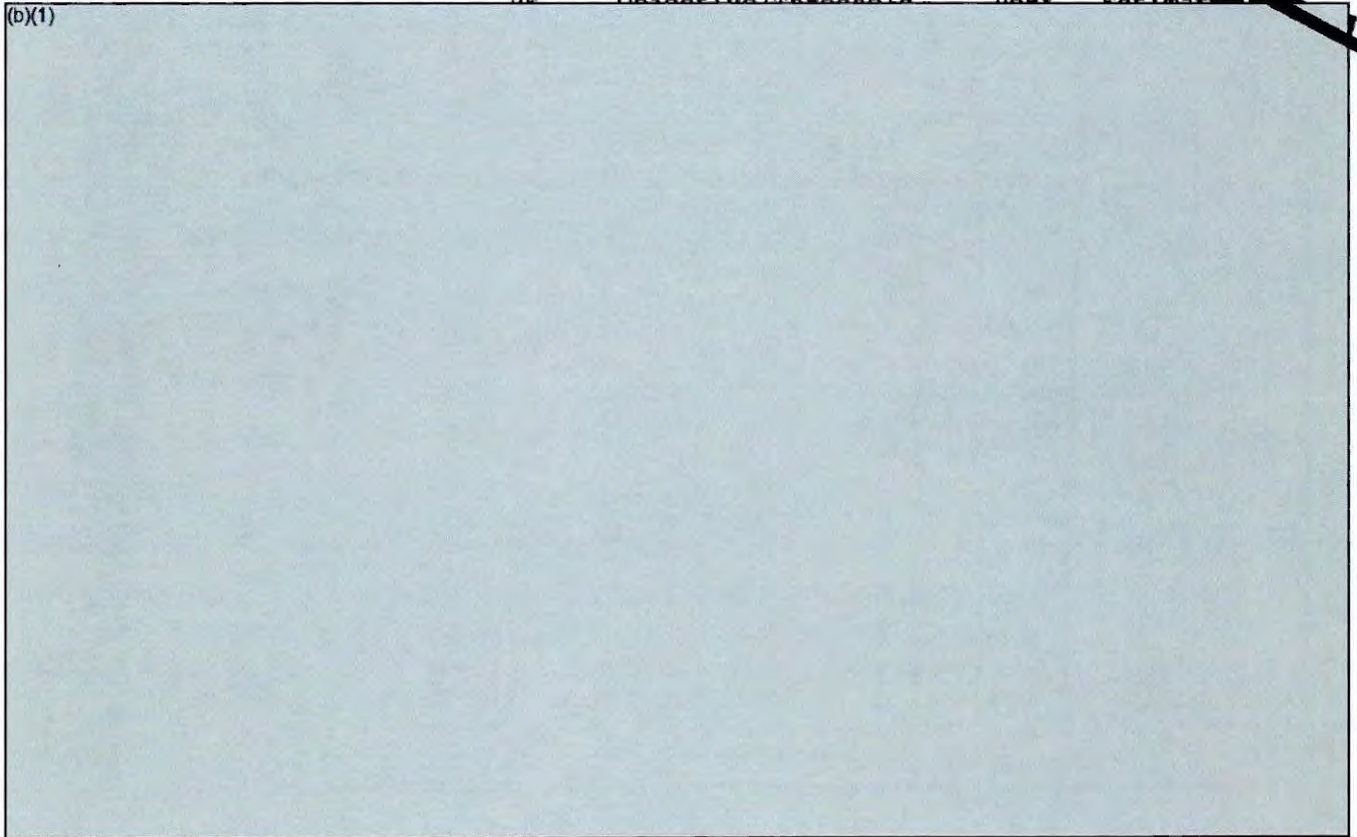
(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 13, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demon- strated	Current
	Objective/Threshold	Perf	Estimate

(b)(1)



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10a. (U) Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
System Response Time (min)	3	3 / 5	N/A	3
Transportability	C130	C130 / C141	N/A	C141
(b)(1)				
Manpower	1200	1200 / 1300	N/A	1200
Nuclear Survivability	TBD	TBD / TBD	N/A	TBD

b. (U) Previous Change Explanations --

Transportability is changed from C-130 to C-141 to meet User's requirements.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

ADM (dated January 28, 1992) Subject: Milestone I Approval.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 13, 1995.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	3165.2	3903.0	3886.6
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	0.0	0.0
Total FY 88 Base-Year \$	3165.2	3903.0	3886.6
Escalation	1158.5	1366.0	1348.5
Development (RDT&E)	(1158.5)	(1366.0)	(1348.5)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	4323.7	5269.0	5235.1

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11b. (U) Total Program Cost and Quantity (Cont'd):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	N/A	0
Total	0	0	0

A RDT&E option does exist for the User Operational Evaluation System (UOES) that consist of 40 missiles with 4 launchers, 2 BM/C3I units, 2 TMD-GBRs and support equipment. These RDT&E units are not fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

ADM (dated January 28, 1992) Subject: Milestone I Approval.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 13, 1995.

12. (U) Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

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THAAD System, December 31, 1994

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	-171.4	-	-	-171.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+366.5	-	-	+366.5
Estimating	+304.6	-	-	+304.6
Other	-	-	-	-
Support	-4.4	-	-	-4.4
Subtotal	+495.3	-	-	+495.3
Current Changes:				
Economic	-4.8	-	-	-4.8
Quantity	-	-	-	-
Schedule	54.7	-	-	+54.7
Engineering	-	-	-	-
Estimating	295.3	-	-	+295.3
Other	-	-	-	-
Support	70.9	-	-	+70.9
Subtotal	+416.1	-	-	+416.1
Total Changes	+911.4	-	-	+911.4
Current Estimate	5235.1	-	-	5235.1

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THAAD System, December 31, 1994

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	+256.0	-	-	+256.0
Estimating	+199.4	-	-	+199.4
Other	-	-	-	-
Support	-3.9	-	-	-3.9
Subtotal	+451.5	-	-	+451.5
Current Changes:				
Quantity	-	-	-	-
Schedule	22.0	-	-	+22.0
Engineering	-	-	-	-
Estimating	202.5	-	-	+202.5
Other	-	-	-	-
Support	45.4	-	-	+45.4
Subtotal	+269.9	-	-	+269.9
Total Changes	+721.4	-	-	+721.4
Current Estimate	3886.6	-	-	3886.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Engineering: - December 1992 SAR

Program configuration changes caused by addition of Solid State Demonstration Array design for risk mitigation.

- December 1993 SAR

Decrease Solid State Demonstration Array estimate to reflect down select (from 3 to 1 contractor); TMD-GBR power generation product transferred to TMD from Technology; increased THAAD engineering costs to implement the Palletized Loading System (PLS), battery, launcher control system and risk

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THAAD System, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

mitigation; THAAD revised assumptions based on engineering changes.

Estimating: - December 1992 SAR
Revised estimate based on delayed Dem/Val contract award. Adjustment for THAAD software lines of code requirement and revised THAAD future year risk mitigation plan.

- December 1993 SAR
Increases for TMD-GBR requirements for signal processors, 9 track Kalman filter and wideband track capability; increases resulting from reduction of National Missile Defense requirements; increases for testing (including targets) and risks; transferred salaries; and extension of development program from three to five years for TMD-GBR and THAAD.

Support: Revised estimate for additional targets required.
Refinement of THAAD targets requirement.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-4.8
Adjustment for Current & Prior Inflation. (Estimating)	+3.2	+4.0
 THAAD		
Reduction of estimate for flight test requirements to 14 instead of 20 flights. (Estimating)	-14.0	-18.6
Increased estimate for additional contract risk based on change in cost methodology. (Estimating)	+154.1	+237.9
Delay award of UOES missile option from FY95 to FY96 due to FY95 Congressional funding reduction. (Schedule)	N/A	+24.7
Extension of Dem/Val and delay of EMD contract award one month due to FY95 funding shortfall. (Schedule)	+22.0	+30.0

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increased estimate for Targets THAAD program. (Support)	+13.8	+25.8
TMD-GBR		
Reprogramming to fund Dem/Val effort in prior years FY92, 93 and 94. (Estimating)	+4.9	+5.9
Increased cost for UOES contractor logistic support from FY 97 through FY 01. (Estimating)	+22.7	+32.5
Revision of estimate for T&E activities due to integration into THAAD. (Estimating)	-30.0	-59.0
Increased estimate for Target TMD-GBR program. (Support)	+31.6	+45.1
Increased estimate for additional contract risk based on change in cost methodology. (Estimating)	+61.6	+92.6
RDT&E Subtotal	+269.9	+416.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --		Initial Contract Price		
(U) <u>THAAD Dem/Val:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Missiles & Space, Sunnyvale, CA				
DASG60-92-C-0101, CPFF		\$688.9	N/A	0
Award: September 4, 1992				
Definitized: September 4, 1992				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$830.9	N/A	\$1062.4	\$1098.5	

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15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-43.4	\$-19.2
Cumulative Variances To Date (12/25/94)	\$-3.7	\$-8.4
Net Change	\$39.7	\$10.8

Explanation of Change:

An over target baseline (OTB) and over target schedule (OTS) were approved and implemented Aug 94. This action provided realistic budgets and schedules to improve planning and control and provides a sound basis for performance measurement. Except for one major subcontractor, all cumulative cost variance (\$88.5M) and schedule variance (\$18.7M) at month-end Jul 94 were adjusted to zero. The remaining subcontractor established an interim performance measurement baseline from Apr 94 through Sept 95 by eliminating all variances as of Mar 94. A comprehensive EAC was performed on the remaining work and was the basis for approval of an OTB for the program. An OTB/OTS for the total program was approved and fully implemented month end Aug 94. No contractual milestones were impacted by the OTS. Since executing the OTB/OTS, variances have remained under 1.5%. There is no significant impact to the program due to the unfavorable cost and schedule variances.

(U) <u>GBR DEM/VAL:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Corporation, Wayland, MA			
DASG60-92-C-0184, CPIF/AF	\$318.4	N/A	3
Award: September 17, 1992			
Definitized: September 17, 1992			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$326.7	N/A	3	\$437.1	\$466.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-11.3	\$-6.5
Cumulative Variances To Date (12/31/94)	\$-53.9	\$-19.1
Net Change	\$-42.6	\$-12.6

Explanation of Change:

Unfavorable changes to cost and schedule variances were mainly caused by problems with the radar antenna equipment. Specific problems encountered include increased nonrecurring engineering (NRE) and manufacturing costs of the T/R module; increased NRE manufacturing cost of the T/R element assembly (T/REA); and weight reduction measures required to accommodate the C-130 transport requirements.

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15. (U) Contract Information (Cont'd):

The NRE for the T/R module is greater than expected because of four unplanned design iterations, all of which have been resolved. The NRE for the T/REA is greater than expected because of unplanned design iterations to improve quality and production yield, all of which have been implemented. Additional manufacturing costs for both the T/R module and the T/REA have incurred primarily because of more complex designs, increased costs of material and subcontractors, and lower than expected monolithic microwave integrated circuit (MMIC) yields. Several other elements within the program contributed to the cost variance, none of which were of the magnitude of the antenna equipment variance. As a result of these problems, subsequent internal delays were experienced; however, at this time, the project office is not anticipating any impact to the overall program schedule.

(U) <u>TMD Targets Program:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Coleman Research Corp., Orlando, FL			
DASG60-92-C-0217, CPFF	\$144.2	N/A	25
Award: October 14, 1992			
Definitized: October 14, 1992			

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$132.2	N/A	25	\$156.6	\$162.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.8	\$-0.4
Cumulative Variances To Date (12/31/94)	\$-1.6	\$-0.2
Net Change	\$0.2	\$0.2

Explanation of Change:

No significant changes to cost/schedule variances since last year.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 36.4% (4 yrs/11 yrs)
- (2) Percent Program Cost Appropriated: 35.4% (\$1852.5 / \$5235.1)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RDT&E	1852.5	576.3	736.2	2070.1	5235.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1852.5	576.3	736.2	2070.1	5235.1

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				100.9	119.6	119.6	119.4	2.8
1993				324.2	393.6	393.6	288.0	2.7
1994				562.0	701.1	701.0	573.3	2.0
1995				498.4	638.2	282.7	6.1	2.7
1996				436.0	576.3			3.0
1997				540.7	736.2			3.0
1998				597.6	838.0			3.0
1999				428.6	619.1			3.0
2000				142.5	212.0			3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

2001				56.1	86.0			3.0
2002				199.6	315.0			3.0
Subtot				3886.6	5235.1	1496.9	986.8	
Grand Total				3886.6	5235.1	1496.9	986.8	

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) 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: MIDS - LVT

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):

Multifunctional Information Distribution System - Low
Volume Terminal (MIDS - LVT)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

PEO for Space, Comms & Sensors	CAPT David P. Fitch
MIDS Program (PMW 101)	Assigned: September 20, 1993
2451 Crystal Drive	AV 332-7618 COMM (703) 602-7618
Arlington, VA 22245-5200	

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0205604N (Shared) Project P2126
PE 0604771D (Shared) Project P773 (Shared)

PROCUREMENT:

APPN 1506 ICN 3105250000 (Navy)

No Security Objection to Open Publication.

(AS AMENDED)

95-C-0334

MAR 27 1995

Office of the Chief of

Naval Operations Dept of the Navy

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5. (U) Related Programs:

F/A-18 Hornet; Joint Tactical Information Distribution System (JTIDS).

6. (U) 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, 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. (U) Program Highlights:

a. (U) 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 Tactical Digital Information Link J (TADIL J)

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7a. (U) Program Highlights (Cont'd):

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 had a MIDS platform requirement and requested that it take the lead in MIDS with USAF support.

In phase I, the Navy operated 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 manufacturing development (Pre-EMD). 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 continued during this phase. 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.

In May, 1993, an Acquisition Review Board (ARB) approved integration of the MIDS-LVT into the F/A-18. The Milestone II DAB Acquisition Decision Memorandum (ADM) was signed 17 December 1993 authorizing contract award, initiating a 6-month study of options to reduce EMD program cost and schedule, and with direction to incorporate MOEs into the MIDS TEMP.

This SAR reports only the U.S. share of the cost, with the exception of page 12 contract CPR reporting.

b. (U) Significant Developments Since Last Report -- Supplement 2 to the PMOU was signed in February 1994, entering the program into the EMD phase. The EMD contract was awarded on 18 March 1994. The study directed by the ADM was completed, and the results approved by USD(A&T). A TEMP incorporating MOEs was approved by DT&E and DOT&E. A contract modification to implement the restructured program has been executed, and exit criteria were promulgated in a USD(A&T) memorandum of 5 October 1994. The contractor submitted the cost proposal for the EMD contract changes needed to implement the restructured MIDS program as approved by USD(A&T); the proposal was received on the mutually agreed upon due date. The contractor began Cost Performance Reporting in October 1994. A Preliminary Design

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7b. (U) Program Highlights (Cont'd):

Review process constructed around the implementation of integrated product teams commenced in January, a few days ahead of the schedule approved by USD(A&T). Progress has continued on the finalization of interface control documentation. Discussions with the Army occurred throughout the period, related to a MIDS variant that could replace the more costly JTIDS Class 2M, and the Army is reported to be close to formally requesting the development of a MIDS variant for their evaluation and use. Discussions and studies have been also held with the Navy program office and PEO responsible for integration and test of LINK 16 into Navy platforms, with the objective of developing schedules and plans to transition Navy platforms from JTIDS to MIDS where such is cost effective. Finally, a series of studies and meetings with USD(A&T) were held relative to the Air Force adoption of a MIDS variant for the F-15, or a design resulting from the Air Force's Affordability and Manufacturing Technology Demonstration. Additional actions are now ongoing with respect to defining potential USAF participation in MIDS.

c. (U) Changes Since As Of Date -- None

8. (U) Threshold Breaches:

There are no breaches to the Approved Acquisition Baseline dated March 8, 1994. There is no Nunn McCurdy unit cost breach.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone II (DAB)	DEC 93	DEC 93	DEC 93
Development Contract Award	DEC 93	DEC 93	MAR 94
F/A-18 Integration Contract Award (NAVAIR)	MAR 94	MAR 94	JUL 94(Ch-1)
Critical Design Review (MIDS Terminal)	DEC 95	DEC 95	DEC 95
First EMD Terminal Delivery (IRT 1)	OCT 97	OCT 97	JUN 97(Ch-1)
First EMD Flight	JUN 98	JUN 98	APR 98(Ch-1)
TECHEVAL			
Start	JUN 00	JUN 00	JUN 00
Complete	JUN 00	JUN 00	JUN 00
OPEVAL			
Start	DEC 00	DEC 00	DEC 00
Complete	DEC 00	DEC 00	DEC 00
Low-Rate Initial Production First Delivery	OCT 00	OCT 00	SEP 00(Ch-1)

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Initial Operational Capability	DEC 00	DEC 00	JUN 00(Ch-1)
Milestone III (DAB)	JUN 01	JUN 01	JUL 00(Ch-1)
Full Rate Production Contract Award	JUN 01	JUN 01	OCT 00(Ch-1)
Organic Support Capability Date	JUN 03	JUN 03	JUL 03
Service Depot Support Date	JAN 04	JAN 04	JAN 04

Acronyms:

IRT - Integration Readiness Testing

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Milestone Schedule Changes:	From: 93 SAR	To: 94 SAR
F/A-18 Integration Contract Award	AUG 94	JUL 94
First EMD Terminal Delivery (IRT 1)	OCT 97	JUN 97
First EMD Flight	Jun 98	APR 98
Low-Rate Initial Production First Delivery	OCT 00	SEP 00
Initial Operational Capability	DEC 00	JUN 00
Milestone III (DAB)	JUN 01	JUL 00
Full Rate Production Contract Award	JUL 01	OCT 00

PM's current estimate is consistent with restructured MIDS program approved by USD(A&T) memo of 5 October 1994. Redefinition of test activities to support a full rate production decision for MIDS will be based upon the TEMP revision now in development, that will be coordinated with/approved by DT&E/DOT&E.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

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10. (U) Performance Characteristics:

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Coded Data Rate (Kbps)				
Standard Packing	28.8	28.8 / 28.8	TBD	28.8
Packed 2 DP	57.6	57.6 / 56.6	TBD	57.6
Packed 4 DP	115.2	115.2 / 115.2	TBD	115.2
	115.2			
Relay Range (nm)	1200	1200 / 500	TBD	1200
Communication Range (NM)	300	300 / 300	TBD	300
Voice Channels	2	2 / 1	TBD	2
Coded Message Error Probability (Z)	1	1 / 2	TBD	1

(b)(1)

Ao	.9	.9 / .9	TBD	.9
MTBF (hr)(lab)	1000	1000 / 1000	TBD	1000
MFHBMCF (hr)(field)	300	300 / 220	TBD	300
MTTR (O-level) (min)	30	30 / 30	TBD	30
Volume (dm3)	16.4	16.4 / 16.4	TBD	16.4
Weight (kg)	29.5	29.5 / 29.5	TBD	29.5

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

b. (U) Previous Change Explanations --

Ao was added at the Milestone II (DAB) review.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	481.1	481.1	463.1
Procurement	443.8	443.8	409.9
Prime Mission Eqmt (PME)	(313.7)		(289.6)
Production Support	(10.5)		(9.6)
Total Flyaway	(324.2)		(299.2)
Other Wpn Sys	(55.7)		(51.6)
Peculiar Support	(6.6)		(6.2)
Initial Spares	(57.3)		(52.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	924.9	924.9	873.0
Escalation	194.6	194.6	238.2
Development (RDT&E)	(51.9)	(51.9)	(65.0)
Procurement	(142.7)	(142.7)	(173.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1119.5	1119.5	1111.2
b. (U) Quantity --			
Development (RDT&E)	42	42	42
Procurement	<u>630</u>	<u>630</u>	<u>630</u>
Total	672	672	672

Approved LRIP quantities of 24 in FY 99 and 82 in FY 00 reflect the F-18 as the only U.S. MIDS platform. Expected changes to add additional platforms to MIDS is envisioned to reduce the percentage of terminals bought under LRIP.

c. (U) Foreign Military Sales/International Cooperative Programs --

Allied Country	FY 1995	FY 1996	FY 1997
France	24.3	28.5	26.0
Italy	25.5	16.3	16.0
Germany	10.8	8.4	6.5
Spain	6.5	6.7	7.6
Eurofighter	0.1	0.6	1.1

Includes foreign common (PMOU) costs only.

d. (U) Nuclear Costs -- None.

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11e. (U) Total Program Cost and Quantity (Cont'd):

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY92\$)	873.0	924.9	
(2) Quantity	672	672	
(3) Unit Cost	1.299	1.376	-5.611
b. (U) Procurement			
(1) Cost (BY92\$)	409.9	443.8	
(2) Quantity	630	630	
(3) Unit Cost	0.651	0.704	-7.639

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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	533.0	586.5	0.0	1119.5
Previous Changes:				
Economic	+12.6	-	-	+12.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-40.2	+0.2	-	-40.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-27.6	+0.2	-	-27.4
Current Changes:				
Economic	-2.5	-4.2	-	-6.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	25.2	9.9	-	+35.1
Other	-	-	-	-
Support	-	-9.3	-	-9.3
Subtotal	+22.7	-3.6	-	+19.1
Total Changes	-4.9	-3.4	-	-8.3
Current Estimate	528.1	583.1	-	1111.2

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MIDS - LVT, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	481.1	443.8	0.0	924.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-36.7	-33.9	-	-70.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-36.7	-33.9	-	-70.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	18.7	8.9	-	+27.6
Other	-	-	-	-
Support	-	-8.9	-	-8.9
Subtotal	+18.7	-	-	+18.7
Total Changes	-18.0	-33.9	-	-51.9
Current Estimate	463.1	409.9	-	873.0

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-2.5
Adjustment for Current & Prior Inflation. (Estimating)	+0.8	+0.8

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
0400 RDT&E, Defense Agencies adjustment in PME support. (Estimating)	+15.0	+19.4
1319 RDT&E, Navy adjustments to MIDS F/A-18 integration cost. (Estimating)	+2.9	+5.0
RDT&E Subtotal	+18.7	+22.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.2
Rephasing of non-recurring requirements. (Estimating)	--	+0.6
Recategorization of support flyaway cost to correct December 93 SAR. (Estimating)	+8.9	+9.3
(Support)	-8.9	-9.3
Procurement Subtotal	--	-3.6

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	1.666

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.666	0.009	--	--	--	-0.007	--	-0.014	-0.012	1.654

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15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(U) MIDS-LVT EMD:

MIDSCO, Inc., Wayne, NJ

N00039-94-C-0008, CPIF/AF

Award: March 18, 1994

Definitized: March 31, 1994

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$285.4	N/A	60	\$285.4	\$285.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$0.2	\$-1.0
Net Change	\$0.2	\$-1.0

Explanation of Change: None.

Note: Additional Contract Comments

The contract value reflects international effort, including the U.S., France, Italy, Germany, and Spain. The MIDS prime contract is a CPIF/AF that was awarded on 18 March 1994. The contractor commenced CPR submissions in October 1994 in accordance with the revised architecture of the MIDS as briefed and approved by USD(A&T). Contract options are not included in the PM's EAC. The Contract Budget Baseline and PM's estimated costs have decreased from the last report due to incorporation of program changes approved by USD(A&T). A formal design to cost program is not established in the contract; however, the contractor and program office are pursuing reductions to production unit costs, and a production unit cost exit criterion for LRIP has been established.

(U) F/A-18 INTEGRATION:

McDonnell Douglas, St. Louis, MO

N00019-94-C-0000, CPFF

Award: July 1, 1994

Definitized: N/A

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$28.7	N/A	N	\$25.3	\$28.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$0.2	\$-1.0
Net Change	\$0.2	\$-1.0

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MIDS - LVT, December 31, 1994

15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	<u>\$-0.1</u>	<u>\$-0.2</u>
Net Change	\$-0.1	\$-0.2

Explanation of Change:

The schedule variance trend is downward. The contractor is increasing manpower to correct this trend. The CSSR figures indicate a slow start on this delivery order. Only 3% of the contract budget is spent at this time.

Note: Additional Contract Comments

The F/A-18 Integration contract (CPFF) was awarded to McDonnell Douglas Aerospace (MDA) to perform the F/A-18 MIDS software and hardware integration in July 1994.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 31.6% (6 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 18.3% (\$203.1 / \$1111.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2008)</u>	<u>Total</u>
RDT&E	203.1	83.4	72.2	169.4	528.1
Procurement	-	-	-	583.1	583.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	203.1	83.4	72.2	752.5	1111.2

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MIDS - LVT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

c. (U) 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

1990				12.4	11.9	11.9	10.2	4.0
1991				9.9	9.7	9.7	9.2	4.3
1992				26.0	26.5	26.5	23.7	2.8
1993				34.8	36.3	36.3	29.3	2.7
1994				43.3	46.3	45.7	7.6	2.0
1995				65.8	72.4	5.1	0.4	2.7
1996				73.7	83.4			3.0
1997				61.9	72.2			3.0
1998				44.1	52.9			3.0
1999				34.4	42.6			3.0
2000				27.6	35.2			3.0
2001				19.2	25.1			3.0
2002				7.1	9.6			3.0
2003				2.9	4.0			3.0
Subtot	42			463.1	528.1	135.2	80.4	

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: Procurement - All Sources

1999	24	4.1	14.1	25.7	32.7			3.0
2000	82	3.9	39.1	57.6	75.5			3.0
2001	82	18.2	36.9	70.8	95.6			3.0
2002	82		35.3	58.2	80.9			3.0
2003	82		34.1	46.4	66.5			3.0
2004	82		33.1	44.7	65.9			3.0
2005	82		32.2	43.6	66.2			3.0
2006	82		31.5	42.7	66.8			3.0
2007	20		9.5	11.9	19.2			3.0
2008	12		7.2	8.3	13.8			3.0
Subtot	630	26.2	273.0	409.9	583.1			

Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	672	26.2	273.0	873.0	1111.2	135.2	80.4	
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MIDS - LVT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				3.0	2.9	2.9	2.7	4.0
1991				4.8	4.7	4.7	4.6	4.3
1992				9.8	10.0	10.0	9.8	2.8
1993				11.9	12.4	12.4	11.0	2.7
1994				21.5	23.0	22.4	5.7	2.0
1995				20.7	22.8	3.9	0.3	2.7
1996				33.3	37.7			3.0
1997				27.6	32.2			3.0
1998				21.6	25.9			3.0
1999				22.3	27.6			3.0
2000				16.6	21.2			3.0
2001				7.9	10.3			3.0
2002				7.1	9.6			3.0
2003				2.9	4.0			3.0
Subtot	28			211.0	244.3	56.3	34.1	

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MIDS - LVT, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy

1999	24	4.1	14.1	25.7	32.7			3.0
2000	82	3.9	39.1	57.6	75.5			3.0
2001	82	18.2	36.9	70.8	95.6			3.0
2002	82		35.3	58.2	80.9			3.0
2003	82		34.1	46.4	66.5			3.0
2004	82		33.1	44.7	65.9			3.0
2005	82		32.2	43.6	66.2			3.0
2006	82		31.5	42.7	66.8			3.0
2007	20		9.5	11.9	19.2			3.0
2008	12		7.2	8.3	13.8			3.0
Subtot	630	26.2	273.0	409.9	583.1			
Navy	658	26.2	273.0	620.9	827.4	56.3	34.1	

Appropriation: 0400 RDT&E, Defense Agencies

1990				9.4	9.0	9.0	7.5	4.0
1991				5.1	5.0	5.0	4.6	4.3
1992				16.2	16.5	16.5	13.9	2.8
1993				22.9	23.9	23.9	18.3	2.7

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1994				21.8	23.3	23.3	1.9	2.0
1995				45.1	49.6	1.2	0.1	2.7
1996				40.4	45.7			3.0
1997				34.3	40.0			3.0
1998				22.5	27.0			3.0
1999				12.1	15.0			3.0
2000				11.0	14.0			3.0
2001				11.3	14.8			3.0
2002								3.0
Subtot	14			252.1	283.8	78.9	46.3	
DoD	14			252.1	283.8	78.9	46.3	
Grand Total	672	26.2	273.0	873.0	1111.2	135.2	80.4	

Obligations and expenditures reflect program office records as of December 31, 1994.

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MIDS - LVT, December 31, 1994

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

This program is pre-Milestone III and no full-rate production decision has been made.

b. (U) Production Rate Variances --

N/A 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 O&S Cost portion of the Program Manager Life Cycle Cost Estimate of April 1993 depicts a 24-year support period of terminals installed on 630 F/A-18 aircraft. This period includes a phase-in, steady-state, and phase-down profile with a terminal operational life estimated to be 15 years. The annual operating hours per aircraft for peace-time deployment are estimated to be 400. The maintenance concept analyzed is the three level structure (i.e., Organizational, Intermediate and Depot) and assumes the availability of Consolidated Automated Support System (CASS) stations at the Intermediate and Depot levels of maintenance. The terminal reliability and maintainability characteristics used are consistent with the requirements contained in the Operational Requirements Document. Other pertinent cost estimates include use of values experienced by analogous systems including JTIDS and the AN/ARC-182 radio.

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AS OF DATE: December 31, 1994

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-P4)
DEPARTMENT OF DEFENSE

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AFAS/FARV (Crusader), December 31, 1994

6. Mission and Description:

AFAS/FARV will be the indirect fire support system providing direct and general support fires to the maneuver forces on the battlefield. AFAS/FARV consists of a self-propelled howitzer (SPH), AFAS, and a resupply vehicle (RSV), FARV. AFAS/FARV responds to the battlefield deficiencies identified in the Close Combat Battlefield Functional Mission Area and the Fire Support Battlefield Functional Mission Area and fulfills the need for an indirect fire weapon system that has increased range and can survive through autonomous operations.

The AFAS will provide close, tactical, and operational fires during offensive and defensive operations; have a 155mm primary armament with significantly increased capabilities over the current M109-series fleet; provide increased rate-of-fire, hold more ammunition, be more responsive and survivable on the battlefield, with reduced manpower requirements; provide increased lethality; be deployable worldwide; and provide for forward maintenance and employ future maintenance concepts.

The companion vehicle to the AFAS will be the FARV. The FARV will sustain the AFAS with ammunition and fuel as it provides close, tactical, and operational fires; be a self-propelled armored vehicle with significantly increased capabilities over the current system, M992A1 FAASV; automate resupply functions; provide increased payload capability and increased survivability with reduced manpower requirements; enable the AFAS to achieve increased lethality levels and achieve independent mission execution; be deployable worldwide; and provide forward maintenance support and employ future maintenance concepts.

7. Program Highlights:

a. Significant Historical Developments --

On November 15, 1994, the AFAS/FARV was successfully reviewed by the Defense Acquisition Board (DAB) for Milestone I. On January 4, 1995, the Principal Deputy Under Secretary of Defense (Acquisition & Technology) signed the Acquisition Decision Memorandum (ADM) which approved AFAS/FARV to proceed into Demonstration/Validation (Dem/Val) as a single program. The ADM also directed that the Army shall plan for a Milestone II DAB or equivalent review, incorporating as many acquisition reform and streamlining measures as practical.

A letter contract was signed on December 29, 1994 with United Defense Limited Partnership, not to exceed \$31 million, to commence development phases I and II (Dem/Val) of the AFAS/FARV. The letter contract also engages the expertise of five other major defense subcontractors. The subcontractors are Teledyne Vehicle Systems (Muskegon, Michigan), Martin Marietta Defense Systems (Pittsfield, Massachusetts), Martin Marietta Armament Systems (Burlington, Vermont), General Dynamics Land Systems (Stirling, Michigan), and

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AFAS/FARV (Crusader), December 31, 1994

7a. Program Highlights (Cont'd):

Electronic Data Systems (Herndon, Virginia). Upon definitization, the effort is anticipated to be a CPIF/AF contract. The award process of the letter contract was based upon streamlined acquisition initiatives, and upon an integrated product development philosophy with "Team AFAS/FARV" consisting of each of the contractor team players and the Army's Project Management Office. This is the first major step in the development of a world-class 155mm artillery system for the Army.

In January 1995, the name of the program was officially changed from AFAS/FARV to Crusader. The AFAS is now referred to as the Self-Propelled Howitzer or the SPH; and, the FARV is now referred to as the Resupply Vehicle or the RSV. The Project Manager for AFAS/FARV is now the Project Manager for Crusader.

b. Significant Developments Since Last Report --
None - Initial SAR

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

None

9. Schedule:

a. Milestones --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
ORD Approval	JUN 93	JUN 93	JUN 93
Milestone I ASARC	OCT 94	OCT 94	OCT 94
Milestone I DAB Review	NOV 94	NOV 94	NOV 94
Development Phase I & II Contract Award	JUN 95	JUN 95	DEC 94(Ch-1)
First Prototype Delivered	OCT 99	OCT 99	OCT 99
Early User Test Start			
Start	OCT 99	OCT 99	OCT 99
Complete	JAN 00	JAN 00	JAN 00
DAB IPR	APR 00	APR 00	APR 00
Phase III Contract Award	APR 00	APR 00	APR 00
Critical Design Review (CDR)	JUN 00	JUN 00	JUN 00
First Pre-Production Delivery	APR 02	APR 02	APR 02
Pre-Production Qualification Test			
Start	APR 02	APR 02	APR 02
Complete	JUL 03	JUL 03	JUL 03
LRIP IPR	AUG 03	AUG 03	AUG 03

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AFAS/FARV (Crusader), December 31, 1994

9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
LRIP Contract Award	OCT 03	OCT 03	OCT 03
LRIP First Delivery	OCT 04	OCT 04	OCT 04
IOT&E			
Start	JAN 05	JAN 05	JAN 05
Complete	APR 05	APR 05	APR 05
First Unit Equipped (FUE)	JUL 05	JUL 05	JUL 05
Organic Support Capability	SEP 05	SEP 05	SEP 05
Milestone III DAB Review	OCT 05	OCT 05	OCT 05
Full Rate Production Contract Award	OCT 05	OCT 05	OCT 05
Service Depot Support Date	DEC 06	DEC 06	DEC 06
First Full Rate Production Delivery	FEB 07	FEB 07	FEB 07

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) - Awarded Phase I/II development, via letter contract, six months earlier than originally planned. This may allow enough time to incorporate the results of the requirements analysis into the development concept for the definitized contract.

d. References --

Planning Estimate:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

10. Performance Characteristics:

a. Performance --	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
AFAS				
Maximum rate of fire (rds/min)	12 for 3-5 mins	12 for 3-5 mins	/ 10 for 3-5 mins	TBD
Maximum range assisted (km)	50	50	/ 40	TBD
				12 for 3-5 mins 50

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AFAS/FARV (Crusader), December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Cross Country Mobility (with rolling resistance of 90 kg per metric ton) (km/hr)	48	48	/ 39	TBD	48
Highway Mobility (on level hard surface) (km/hr)	78	78	/ 67	TBD	78
Mean Time Between System Abort/1 (MTBSA) (hrs)	68	68	/ 62	TBD	68
FARV					
Rearm AFAS/3	60 complete rds in less than 12 mins	60 complete rds in less than 12 mins	/ 60 complete rds in 12 mins	TBD	60 complete rds in 12 mins
Cross Country Mobility (with rolling resistance of 90 kg per metric ton) (km/hr)	48	48	/ 39	TBD	48
Highway Mobility (on hard surface road) (km/hr)	78	78	/ 67	TBD	78
Mean Time Between System Abort (MTBSA)/1	116	116	/ 104	TBD	116

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

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AFAS/FARV (Crusader), December 31, 1994

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	2357.0	2357.0	2357.0
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 95 Base-Year \$	2357.0	2357.0	2357.0
Escalation	423.0	423.0	422.7
Development (RDT&E)	(423.0)	(423.0)	(422.7)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2780.0	2780.0	2779.7

b. Quantity --			
Development (RDT&E)	0	0	
Procurement	<u>N/A</u>	<u>N/A</u>	
Total	0	0	0

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

12. Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with
Section 2433, Title 10, USC.

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AFAS/FARV (Crusader), December 31, 1994

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2780.0	0.0	0.0	2780.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.3	-	-	-0.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.3	-	-	-0.3
Total Changes	-0.3	-	-	-0.3
Current Estimate	2779.7	-	-	2779.7

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AFAS/FARV (Crusader), December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2357.0	0.0	0.0	2357.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	2357.0	-	-	2357.0

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)

N/A

-0.3

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AFAS/FARV (Crusader), December 31, 1994

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 16.7% (2 yrs/12 yrs)

(2) Percent Program Cost Appropriated: 2.5% (\$68.8 / \$2779.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2005)</u>	<u>Total</u>
RD&E	68.8	201.5	267.9	2241.5	2779.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	68.8	201.5	267.9	2241.5	2779.7

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1994				3.8	3.8	3.8		2.0
1995				63.4	65.0	14.1		2.7

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APAS/FARV (Crusader), December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1996				190.6	201.5			3.0
1997				246.1	267.9			3.0
1998				301.1	337.6			3.0
1999				270.2	312.1			3.0
2000				318.5	378.9			3.0
2001				423.3	518.7			3.0
2002				318.7	402.3			3.0
2003				141.6	184.1			3.0
2004				51.7	69.2			3.0
2005				28.0	38.6			3.0
Subtot				2357.0	2779.7	17.9		
Grand Total				2357.0	2779.7	17.9		

17. Production Rate Data:

- a. Production Baseline Rate --
N/A for Pre-Milestone II programs.
- b. Production Rate Variances --
N/A for Pre-Milestone III programs.
- c. Deliveries (Plan/Actual) -- None.

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AFAS/FARV (Crusader), December 31, 1994

17d. Production Rate Data (Cont'd):

- d. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

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: JPATS

AS OF DATE: December 31, 1994

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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 System Center/YT	COL JOHN L. HUDSON
Wright-Patterson AFB	Assigned: July 13, 1994
Dayton, OH 45433-7111	AV (88) 785-9223
COMM (513) 255-9223	

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603208N (Shared) Project H1150
PE 0604233F (Shared) Project 654102

FY94 and prior: Project 644102

5. Related Programs:

None.

6. Mission and Description:

The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN program to replace USAF's T-37B aircraft, USN's T-34C

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

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OATED (PA) DEOISR 85-C-0606

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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 students 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 off-aircraft equipment and the GBTS. The on-equipment maintenance will be performed by third party contractor or organically supported. The USN will employ total contractor logistics support for the entire 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 convened to recommend the program strategy. In Feb 92, the Assistant Secretary of the Air Force for Acquisition decided to recommend a Single Contract winner-take-all Strategy. On 29 May 1992, the Conventional Systems Committee (CSC) determined that the program was ready for the Defense Acquisition Board (DAB) review. The June 92 DAB was postponed.

On 19 Jan 1993, the Defense Acquisition Board conducted a Milestone O/I Review. Milestone O was approved with the Air Force designated lead service. The Acquisition Program Baseline (APB) was also approved on 19 Jan 93. Milestone I was approved contingent upon

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7a. Program Highlights (Cont'd):

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 was to include separate and sequential aircraft and Ground Based Training System competitors. USD(A) review and approval of the RFP was also included as an action item.

On 19 May 1993, the JPATS Acquisition Strategy was reviewed, by a second DAB. On 7 Jul 93 a new Acquisition Decision Memorandum (ADM) was signed, accepting the Air Force's new proposed Strategy, changing to a single contract with the government sequentially selecting both aircraft GBTS contractors. The aircraft contractor is the prime contractor with the GBTS contractor as the prime's subcontractor. The prime contractor will have total systems performance responsibility. An updated Operational Requirements Document (ORD) II dated 1 Sep 93, was released 3 Jan 94. The change in acquisition strategy and signing of ORD II requires an update to the Acquisition Program Baseline (APB).

On 28 Jan 1994, Amendment 1 to Version B of the Draft RFP was released to industry.

b. Significant Developments Since Last Report --

In February 1994, the program's Acquisition Strategy changed which resulted in delaying the release of the Request for Proposal (RFP). A new Acquisition Strategy Report (ASR) and Acquisition Program Baseline (APB) were submitted for approval on 25 Feb 94.

On 17 May 1994, the newest ASR and APB were approved and implemented. The updated ASR required the prime contractor to conduct the GBTS Source Selection and subsequently choose the GBTS contractor. The GBTS contractor will still be the subcontractor to the prime contractor.

On 18 May 1994, the RFP was released to industry. With the release of the RFP, JPATS' Source Selection officially began.

On 24 Jul 1994, the Source Selection Flight Evaluation began. Over a nine week period, evaluations on the performance and handling qualities of the competitors' aircraft took place. On 30 Sep 1994, the Flight Evaluation phase of Source Selection was successfully completed.

On 24 Oct 1994, the Source Selection Initial Evaluation Briefing (IEB) was presented to the Source Selection Advisory Council (SSAC).

The JPATS Program is expected to satisfy all Mission Requirements.

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7b. Program Highlights (Cont'd):

c. Changes Since As Of Date --

On 24 Jan 95, a Modification Request (MR) to the RFP was released to the JPATS contenders. The MR contained new Air Force and Navy funding profiles. These new funding profiles have resulted in a change to the annual procurement quantities. The MR also addressed the option of having the Air Force go to a full Contractor Logistic Support (CLS) maintenance concept vice a partial CLS maintenance concept. Because of the MR, the Milestone II and Manufacturing Development Contract Award dates have slipped from February 1995 to August 1995.

8. Threshold Breaches:

There are several schedule breaches to the DAE approved Acquisition Program Baseline (APB) dated 17 May 94. A Program Deviation Report (PDR) will be submitted. A baseline change request will be submitted after contract award. Nunn-McCurdy unit cost reporting is not required for Pre-Milestone II programs IAW Title 10, USC, Section 2433.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0/I	JAN 93	JAN 93	JAN 93
Early Operational Assessment (EOA)			
Start	N/A	JUL 94	JUL 94 (Ch-02)
Finish	N/A	OCT 94	OCT 94 (Ch-02)
Milestone II	JUN 94	FEB 95	AUG 95 (Ch-01)
Manufacturing Development Contract	JUL 94	FEB 95	AUG 95 (Ch-01)
Award			
Aircraft Preliminary Design Review (PDR)	DEC 94	JUL 95	JAN 96 (Ch-01)
Low Rate Initial Production Option	FEB 95	JUL 95	NOV 95 (Ch-01)
(LRIP) Exercise Award			
GBTS Contract Award	FEB 95	N/A	N/A (Ch-03)
GBTS Contract Change Proposal	N/A	APR 96	SEP 96 (Ch-02)
Incorporation			
Full Rate Production Contract Award	JUL 98	FEB 00	FEB 01 (Ch-01)
Aircraft Critical Design Review (CDR)	JUN 95	FEB 96	AUG 96 (Ch-01)
Operational Flight Trainer (OFT) PDR	AUG 95	N/A	N/A (Ch-09)
Operational Flight Trainer CDR	FEB 96	N/A	N/A (Ch-04)
Aircraft QT&E			
Start	N/A	JUN 97	NOV 97 (Ch-02)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Finish	N/A	DEC 97	MAY 98 (Ch-02)
DT&E			
Start	SEP 96	N/A	N/A (Ch-05)
Finish	FEB 97	N/A	N/A (Ch-05)
First Aircraft Delivery (AF)	MAR 97	DEC 97	JUN 98 (Ch-01)
GBTS System Integration Review (SIR) (GBTS Level CDR)	N/A	OCT 98	JUN 99 (Ch-01)
Aircraft Multi-Service Operational Test & Evaluation			
Start	N/A	JUN 98	DEC 98 (Ch-02)
Finish	N/A	SEP 98	APR 99 (Ch-02)
Multi-Service Operational Test & Evaluation (MOT&E)			
Start	NOV 97	N/A	N/A (Ch-08)
Finish	MAR 98	N/A	N/A (Ch-08)
Milestone III	JUN 98	JAN 99	SEP 99 (Ch-01)
GBTS System Level Formative Evaluation (GBTS DT/OT&E)			
Start	N/A	AUG 99	JUN 00 (Ch-01)
Finish	N/A	APR 00	JAN 01 (Ch-01)
OFT First Delivery (Randolph AFB)	JUL 98	N/A	N/A (Ch-06)
OFT DT/OT&E			
Start	FEB 98	N/A	N/A (Ch-07)
Finish	JUL 98	N/A	N/A (Ch-07)
Aircraft Organic Support Capability	N/A	DEC 99	MAR 00 (Ch-02)
GBTS Aircrew Training Devices (ATD) First Deliveries	N/A	APR 00	JUN 00 (Ch-01)
Initial Operational Capability (AF)	MAR 00	DEC 00	FEB 01 (Ch-01)
Full Operational Capability (AF)	SEP 07	JUN 07	JUN 11 (Ch-01)
Initial Operational Capability (Navy)	APR 03	OCT 01	JUL 03 (Ch-01)
Full Operational Capability (Navy)	SEP 10	JUL 08	JAN 17 (Ch-01)

b. Previous Change Explanations --

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.

Milestone O/I was approved Jan 93, upon completion of action items Milestone I would be approved. These items were completed May 93.

Change in Acquisition Strategy: The JPATS Acquisition Strategy was reviewed at the second DAB on 19 May 93. A 7 Jul 93 ADM was issued,

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9b. Schedule (Cont'd):

changing the Acquisition Strategy and requiring a revised Milestone Schedule. JPATS submitted a revised APB as of 25 Feb 94.

c. Current Change Explanations --

(Ch-01) The JPATS' schedule slipped due to changes in the Air Force/Navy funding profiles and procurement buy quantities, and the release of a Modification Request (MR) to the RFP. Changes in the funding profiles for both Services resulted in reductions in yearly procurement quantities. These reductions slowed JPATS' original ramp-up rates; thus, reducing deliveries and causing all Air Force and Navy milestone dates to slip. The release of the MR on 24 Jan 95 resulted in the Milestone II and Manufacturing Development Contract Award dates to slip from a February 1995 award date to an August 1995 award date.

(Ch-02) The 17 May 94 APB reflects these stub-items as additional milestones. Due to the approval of the 17 May 94 APB, the following items are also considered program milestones: GBTS System Integration Review (SIR), Aircraft Multi-Service Operational Test & Evaluation Start/Finish, GBTS System Level Formative Evaluation Start/Finish, and GBTS Aircrew Training Devices (ATD) First Deliveries.

(Ch-03) The milestone GBTS Contract Award was replaced by milestone GBTS Contract Change Proposal.

(Ch-04) The milestone Operational Flight Trainer CDR was replaced by milestone GBTS System Integration Review (SIR).

(Ch-05) The milestones DT&E Start/Finish were replaced by milestones Aircraft QT&E Start/Finish.

(Ch-06) The milestone OFT First Delivery (Randolph AFB) was replaced by milestone GBTS Aircrew Training Devices (ATD) First Deliveries.

(Ch-07) The milestones OFT DT/OT&E Start/Finish were replaced by milestones GBTS System Level Formative Evaluation (GBTS DT/OT&E) Start/Finish.

(Ch-08) The milestones Multi-Service Operational Test & Evaluation (MOT&E) Start/Finish were replaced by milestone Aircraft Multi-Service Operational Test and Evaluation Start/Finish.

(Ch-09) The milestone Operational Flight Trainer (OFT) PDR is no longer considered a milestone and was not replaced by an additional milestone. Due to acquisition reform and streamlining, the JPATS contractor will now determine the design at component level. The

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9c. Schedule (Cont'd):

focus changed from a component level review to a system level review.

The GBTS System Integration Review complies with the intent of this requirement as stated in the Integrated Master Plan (IMP).

d. References --

Planning Estimate:

Program Management Directive 1104(12)

/0604233F/0604227F/0804740F/0804741F/0804748F, 18 MAR 92.

Operational Requirements Document dated 3 April 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated May 17, 1994.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Syllabus Maneuvers Mission Profiles (Contact, Familiarisation, Precision Aerobatics, Instrument, and Navigation - High and Low)	Accomp- lish all five mission profiles	Accomp- lish all five mission profiles	/ Accomp- lish all five mission profiles	TBD	Accomp- lish all five mission profiles
Sustained Speed at 1000 ft MSL, hot day (KTAS)	270	270	/ 250 (270 Dash)	TBD	250 (270 Dash)
Operational G Envelope (Gs)	+7 to -3 sym- metric	+7 to -3 sym- metric	/ +6 to -3 sym- metric; +4 to 0 asym- metric	TBD	+6 to -3 sym- metric; +4 to 0 asym- metric
Pressurization (PSI Differential)	5.0	5.0	/ 3.5	TBD	3.5
Bird Strike Capability (4 lb bird, no catastrophic 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

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10a. Performance Characteristics (Cont'd):

	<u>PR</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Able To Perform an Engine Out Landing	Unpre- pared surface	Unpre- pared surface	/ Runway	TBD	Runway
Anthropometric Accommodation (Sitting Height in inches)	32.4 to 41.4	31.0 to 40.0	/ 32.8 to 40.0	TBD	32.8 to 40
Able to be Flown Operationally from Either Cockpit	Inter- change- able Instruc- tor/ Student	Inter- change- able Instruc- tor/ Student	/ Yes	TBD	Yes
Stepped Tandem	0 Degree Over-the -Nose Visi- bility from the Rear Cockpit at Design Eye Height	0 Degree Over-the -Nose Visi- bility from the Rear Cockpit at Design Eye Height	/ Yes	TBD	Yes
Exterior Noise	FAR Part 36, Most Restric- tive App- licable Standard	FAR Part 36, Most Restric- tive App- licable Standard	/ FAR Part 36, Most Restric- tive App- licable Standard	TBD	FAR Part 36, Most Restric- tive App- licable Standard
Takeoffs/Touch & Go/Land (Wx, Weight, Configuration) at Main Operating Bases (Runway Length - FT)	4000	4000	/ 5000	TBD	5000

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10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
IFR Certified Instrumentation	All Digital except Backups	All Digital except Backups	/ IFR Cert-ified (Select-able RADI/EHSI)	TBD	IFR Cert-ified (Select-able RADI/EHSI)
Visual System (GBTS)	Yes	Yes	/ Yes	TBD	Yes

b. Previous Change Explanations --

There has been a change to the Anthropometric Accommodation (Sitting Height in Inches) parameter from 34 to 40 inches, to 32.8 to 40 inches. The new requirement complies with the 7 July 93 ADM direction to accommodate not less than 80% of population of eligible women.

An administrative error was made in the Performance Characteristics section of the APB. The IFR Certified Instrumentation in ORD I and ORD II is IFR Certified (Selectable RADI/EHSI) not IFR Certified (Selectable ADI/HSI).

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

Program Management Directive 1104(12)
/0604233F/0604227F/0804740F/0804741F/0804748F, 18 MAR 92.
Operational Requirements Document dated 3 April 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated May 17, 1994.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	229.3	258.6	274.3
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	229.3	258.6	274.3
Escalation	48.0	43.9	60.8
Development (RDT&E)	(48.0)	(43.9)	(60.8)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	277.3	302.5	335.1
b. Quantity --			
Development (RDT&E)	2	1	1
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	2	1	1

JPATS' RDT&E aircraft is fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

Program Management Directive 1104(12)

/0604233F/0604227F/0804740F/0804741F/0804748F, 18 MAR 92.

Operational Requirements Document, dated 3 APR 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated May 17, 1994.

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12. 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	-6.0	-	-	-6.0
Quantity	-	-	-	-
Schedule	+0.5	-	-	+0.5
Engineering	-	-	-	-
Estimating	+31.0	-	-	+31.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+25.5	-	-	+25.5
Current Changes:				
Economic	-2.5	-	-	-2.5
Quantity	-	-	-	-
Schedule	0.7	-	-	+0.7
Engineering	-	-	-	-
Estimating	34.1	-	-	+34.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+32.3	-	-	+32.3
Total Changes	+57.8	-	-	+57.8
Current Estimate	335.1	-	-	335.1

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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	+0.4	-	-	+0.4
Engineering	-	-	-	-
Estimating	+21.4	-	-	+21.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+21.8	-	-	+21.8
Current Changes:				
Quantity	-	-	-	-
Schedule	0.5	-	-	+0.5
Engineering	-	-	-	-
Estimating	22.7	-	-	+22.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+23.2	-	-	+23.2
Total Changes	+45.0	-	-	+45.0
Current Estimate	274.3	-	-	274.3

b. Previous Change Explanations --

RDT&E

Economic: Air Force Revised Economic Escalation Indices.
Navy Revised Economic Escalation Indices

Schedule: Air Force Revised Acquisition Strategy

Estimating: Refinement of Program Estimate.
Air Force Refined Estimate, ORD II refined the GBTS requirements.
Air Force Adjustment for Current and Prior Inflation
Navy Decreased effort by removing R&D Aircraft, Mission Support Only.
Navy Adjustment for Current and Prior Inflation.

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13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices. (Economic)	N/A	-2.5
Delay in Air Force program effects Milestone II and manufacturing development contract award. (Schedule)	+0.5	+0.7
Air Force Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
Air Force increased risk in GBTS development to meet ORD II requirements. (Estimating)	+22.2	+34.0
Correction to AF Previous Change for base year rounding error in Dec93 SAR. (Estimating)	+0.4	--
Navy Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1
Navy Directed Program Budget Adjustment for taxes. (Estimating)	-0.2	-0.2
RDT&E Subtotal	<u>+23.2</u>	<u>+32.3</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information:

JPATS' Manufacturing Development, Production, and Contractor Logistic Support (CLS) contracts are estimated to be awarded in August 1995.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 23.5% (4 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 14.7% (\$49.4 / \$335.1)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2008)</u>	<u>Total</u>
RDT&E	49.4	49.6	80.1	156.0	335.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	49.4	49.6	80.1	156.0	335.1

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

1994			3.3	3.3	3.6	3.6	1.5	2.0
1995			3.4	3.4	3.8	0.6		2.7
1996			2.2	2.2	2.6			3.0
1997			2.9	2.9	3.5			3.0
1998			3.0	3.0	3.7			3.0
1999								3.0
Subtot			14.8	14.8	17.2	4.2	1.5	
Navy			14.8	14.8	17.2	4.2	1.5	

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JPATS, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1992			1.0	1.0	1.1	0.9	0.9	2.8
1993			1.8	1.8	1.9	1.9	1.8	2.7
1994			2.9	2.9	3.2	1.8	1.0	2.0
1995			31.6	31.6	35.8	0.5		2.7
1996			40.3	40.3	47.0			3.0
1997			63.8	63.8	76.6			3.0
1998			44.8	44.8	55.4			3.0
1999			37.1	37.1	47.3			3.0
2000			18.0	18.0	23.6			3.0
2001			9.5	9.5	12.8			3.0
2002			1.4	1.4	2.0			3.0
2003			1.4	1.4	2.0			3.0
2004			1.4	1.4	2.0			3.0
2005			1.4	1.4	2.1			3.0
2006			1.3	1.3	2.1			3.0
2007			0.9	0.9	1.5			3.0
2008			0.9	0.9	1.5			3.0
Subtot	1		259.5	259.5	317.9	5.1	3.7	

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JPATS, December 31, 1994

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: 3600 Research, Development, Test + Eval, AF (Cont'd)

USAF	1		259.5	259.5	317.9	5.1	3.7	
Grand Total	1		274.3	274.3	335.1	9.3	5.2	

Expenditures and Obligations reflect program office records as of 31 Dec 94.

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(0&A)823)
PROGRAM: MLR

AS OF DATE: December 31, 1994

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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	CAPT T. Davis
1411 Jefferson Davis Hwy.	Assigned: September 25, 1992
Naval Air Systems Command	AV 222-0177 COMM (703) 692-0177
Washington, DC 20361-1250	
4. Program Elements/Procurement Line Items:
 RDT&E:
 PE 0604262N (Shared)

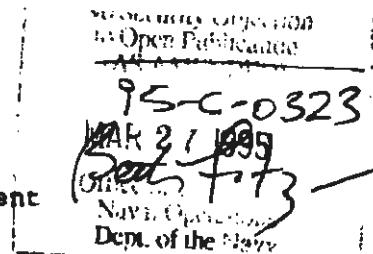
5. Related Programs:
V-22 Osprey, Helicopter Development, CH-46 Replacement

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.

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95-C-0851

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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).

The V-22 Defense Acquisition Board (DAB) was rescheduled from fall of 1993 to fall of 1994 at the direction of USD (A&T) based on recommendation from ASN(RD&A). Decision for MLR candidate alternative was made at the V-22 DAB.

b. Significant Developments Since Last Report --

In February 1994 BDM Inc. was tasked to do a follow-on Cost and Operational Effectiveness Analysis (COEA). The MLR Program Office was requested to provide survivability data to support maneuver warfare tactics. A draft final COEA report was completed and a brief was

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7b. Program Highlights (Cont'd):

provided to ASN RD&A in August 1994. In December 1994 a Program Decision Memorandum was issued providing the direction to continue the V-22 program. All efforts on the MLR program have been terminated as a result of this action.

This is the final 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 --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	MAR 94
Definitize Requirement	DEC 93	N/A	DEC 94
Milestone I	JAN 94	N/A	N/A (Ch-1)

b. Previous Change Explanations --

The V-22 DAB was rescheduled from fall of 1993 to fall of 1994 at the direction of USD(A). Cost and Operational Effectiveness Analysis (COEA) completion date extended from September 1993 to March 1994 to include special operations forces requirements at the direction of ASN(RD&A).

Due to the delay in COEA completion and the requirement for other studies to support Navy and Air Force Operations Command Position at the DAB, current estimate to definitize requirement was rescheduled from December 1993 to December 1994.

Milestone I was rescheduled from January 1994 to January 1996 based upon changes to dates for completion of COEA and rescheduling of definitization of requirement.

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9c. Schedule (Cont'd):

c. Current Change Explanations --

(CH-1) This schedule milestone is no longer applicable due to termination of the program.

d. References --

Planning Estimate:

FY 1994 Presidents Budget, dated April 8, 1993.

Approved Program: None.

10. Performance Characteristics:

a. Performance Characteristics -- None.

Performance characteristics were to be defined as trade studies from contracts were completed and advanced helicopter candidates developed for the Cost and Operational Effectiveness Analysis. All studies were completed; however, program was terminated prior to approval of performance characteristics.

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):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	35.0	0.0	22.1
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	35.0	0.0	22.1

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11a. Total Program Cost and Quantity (Cont'd):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1.0	0.0	0.4
Development (RDT&E)	(1.0)	(0.0)	(0.4)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	36.0	0.0	22.5

b. Quantity --

Development (RDT&E)	0	N/A	0
Procurement	<u>0</u>	<u>N/A</u>	<u>0</u>
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. 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	36.0	0.0	0.0	36.0
Previous Changes:				
Economic	+0.1	-	-	+0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.5	-	-	-9.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.4	-	-	-9.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.1	-	-	-4.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.1	-	-	-4.1
Total Changes	-13.5	-	-	-13.5
Current Estimate	22.5	-	-	22.5

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MLR, December 31, 1994

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	-9.1	-	-	-9.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.1	-	-	-9.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.8	-	-	-3.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-3.8	-	-	-3.8
Total Changes	-12.9	-	-	-12.9
Current Estimate	22.1	-	-	22.1

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices

Estimating: Adjustment for current and prior inflation. Revised studies estimates based upon actuals.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

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13c. Cost Variance Analysis (Cont'd):

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised studies estimates

based upon actuals. (Estimating)

-3.8

-4.1

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 100.0% (3 yrs/3 yrs)

(2) Percent Program Cost Appropriated: 100.0% (\$22.5 / \$22.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u>	<u>Total</u>
RD&E	22.5	-	-	-	22.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	22.5	-	-	-	22.5

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MLR, December 31, 1994

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	Obliga- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1992				21.5	21.9	21.8	20.9	2.8
1993								2.7
1994				0.6	0.6	0.5	0.4	2.0
Subtot				22.1	22.5	22.3	21.3	
Grand Total				22.1	22.5	22.3	21.3	

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AS OF DATE: December 31, 1994

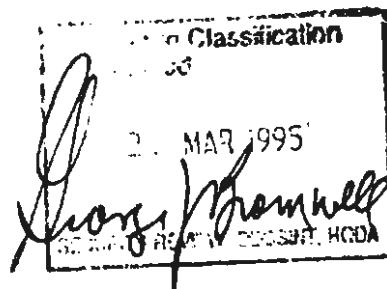
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1. (U) Designation and Nomenclature (Preferred Name):
Guided Missile System, Air Defense (PATRIOT) P3I Program
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:
PROJECT MANAGER COL FRANK L. POWELL III
PATRIOT PROJECT OFFICE Assigned: July 27, 1994
ATTN: SFAE-MD-PA AV 645-3240 COMM (205) 966-3240
REDSTONE ARS, AL 35807-3801
4. (U) Program Elements/Procurement Line Items:

RDTE&E:

```
PE 23801A
PE 63216C (Shared) ERINT
PE 64216C (Shared) ERINT
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~~Classification: UNCLASSIFIED~~
~~Authority: 25 USC 1621~~
~~Declassification: Automatic, 2025-01-01~~

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PATRIOT P3I, December 31, 1994

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APFN 2032 ICN C50700 (Army)

APFN 2032 ICN CA0267 (Army)

APFN 0300 ICN 0208060C (DCA/DNA) (Shared) ERINT

5. (U) Related Programs:

PATRIOT, SDS-GPALS, ERINT

6. (U) Mission and Description:

PATRIOT, the centerpiece of the Army's corps and theater air defense forces, is an extremely capable high-to-medium altitude, long-range air defense missile system which provides air defense of ground combat forces and high-value assets against the air threat of the 1990s and beyond. PATRIOT is designed to cope with enemy defense suppression tactics that may include tactical ballistic missiles (TBM), cruise missiles, anti-radiation missiles, advanced aircraft employing saturation, maneuver, sophisticated electronic countermeasures (ECM), and low radar cross-section. In the Field Army, PATRIOT air defenses will be complemented by short-range, low altitude forward area defense weapons and will be integrated with other ground and air assets in the overall air defense of the theater of operations. The system can conduct multiple simultaneous engagements of high performance air breathing targets and tactical ballistic missiles with a high probability of target kill. The system will provide air defense protection in all weather conditions and in hostile ECM environments. PATRIOT unique equipment at the Headquarters and Headquarters Battery (HQB) of PATRIOT battalions includes the Information and Control Central (ICC), four Communications Relay Groups (CRG), their associated Antenna Mast Groups (AMG), and a trailer mounted power unit. The combat element of the system is the PATRIOT Fire Unit (FU), which consists of the Radar Set (RS), Engagement Control Station (ECS), AMG, Electric Power Plant (EPP), and Launcher Station (LS). The PATRIOT RS is a multifunction phased array radar which performs a variety of surveillance, acquisition, and guidance tasks in directing a battery of LS armed with four ready missiles each. The number of LS in a FU is normally eight; however, this number may be tailored based on the situation and mission. The only manned element of the FU during air battle, the ECS, provides the human interface for control of automated operations.

The system modifications which have been developed exclusively within the PATRIOT P3I program are the Expanded Weapon Control Computer and Optical Disk, Radar Enhancement Phase 2, and the Guidance Enhancement Missile.

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PATRIOT P3I, December 31, 1994

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The PATRIOT P3I program is the evolution of the phased materiel change improvement program to upgrade PATRIOT system performance. As a result of evolving threat and analysis of PATRIOT performance in Operation Desert Storm, several system improvements/modifications are being implemented. These system improvements include enhancements to radar performance, communications upgrades, and increased computer capability. The P3I program is funded by both the Army and the Ballistic Missile Defense Organization.

b. (U) Significant Developments Since Last Report --

A PATRIOT Milestone IV/II Defense Acquisition Board (DAB) review was conducted in May 94, which resulted in the PATRIOT PAC-3 program decision. The PATRIOT PAC-3 program combines the majority of the PATRIOT P3I program and the development of the PAC-3 missile into a single Major Defense Acquisition Program (MDAP). Based on the decision to establish PATRIOT PAC-3 as a single MDAP, applicable funding contained in the PATRIOT P3I SAR is being transferred to the PATRIOT PAC-3 SAR. All P3I funding except for FY88 Army RDTE funding of \$21.1M TY, is transferred to the PAC-3 SAR. An initial PATRIOT PAC-3 SAR will be submitted as of 31 Dec 94. Because the P3I funding is being transferred to the PAC-3 SAR, this will be the last SAR submission for PATRIOT P3I.

The PATRIOT P3I System is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

An Acquisition Program Baseline (APB) for the PATRIOT PAC-3 program was approved by the Defense Acquisition Executive (DAE) on 22 Feb 95. This APB incorporates cost, schedule, and performance characteristics of the PATRIOT P3I program into the PAC-3 program.

8. (U) Threshold Breaches:

No approved APB exists for the PATRIOT P3I program. The PATRIOT PAC-3 APB was approved by the Defense Acquisition Executive (DAE) on 22 Feb 95. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Configuration 1 Production Test	DEC 94	N/A	MAR 95 (Ch-1)
Configuration 1 First Unit Equipped	JUN 95	N/A	JUN 95
Configuration 2 Follow On Test	DEC 95	N/A	DEC 95

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PATRIOT P3I, December 31, 1994

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Configuration 2 First Unit Equipped	JUN 96	N/A	JUN 96
Configuration 3 Follow On Test	JUN 98	N/A	JUN 98
Configuration 3 First Unit Equipped	MAR 99	N/A	SEP 98 (Ch-1)

All of the above milestones are associated with the PATRIOT PAC-3 program and are included in the approved PATRIOT PAC-3 APB. These milestones will be reported in the PATRIOT PAC-3 SAR.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) The milestone dates noted were changed to coincide with the objective dates contained in the approved PATRIOT PAC-3 APB. These dates were revised after the original Planning Estimate was developed for the 31 Dec 93 PATRIOT P3I SAR.

d. (U) References --

(U) Planning Estimate:
FY95 President's Budget submitted 7 Feb 94.

(U) Approved Program: None.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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(b)(1)

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PATRIOT P3I, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	Approved Program	Demon- strated	Current
PE	Objective/Threshold	Perf	Estimate
(b)(1)			

No performance characteristics exist which are PATRIOT P3I only. The performance characteristics in the approved PATRIOT PAC-3 APB are based on total system performance requirements. The PATRIOT PAC-3 Operational Requirements Document (ORD) makes no distinction between the PATRIOT P3I and PATRIOT Upgrades programs. The ORD defines PAC-3 capability as the sum of a series of incrementally fielded system enhancements and materiel changes. These performance parameters will be reported in the PATRIOT PAC-3 SAR.

b. (U) Previous Change Explanations --

Threshold values are shown for all performance characteristics until contracts are awarded for hardware delivery and subsequent system testing.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

Operational Requirements Document for PATRIOT Advanced Capability (PAC)-3 dated 01 May 92 (Rev 1.3)

(U) Approved Program: None.

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PATRIOT P3I, December 31, 1994

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	460.5	0.0	459.4
Procurement	903.2	0.0	1014.8
Total Flyaway Costs	(864.6)		(976.2)
Other Weapons System	(0.0)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(38.6)		(38.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	1363.7	0.0	1474.2
Escalation	408.3	0.0	440.3
Development (RDT&E)	(102.6)	(0.0)	(101.8)
Procurement	(305.7)	(0.0)	(338.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1772.0	0.0	1914.5
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>1</u>	<u>N/A</u>	<u>1</u>
Total	1	N/A	1

Since PATRIOT P3I has no approved Acquisition Program Baseline, there is no longer an applicable unit of measure. The Federal Acquisition Streamlining Act (FASTA) of 1994 changed the SAR unit cost reporting baseline from the prior year's SAR to the APB.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

FY 1995 President's Budget submitted 7 Feb 94.

(U) Approved Program: None.

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PATRIOT P3I, December 31, 1994

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 94 SAR)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	1474.2	0.0	
(2) Quantity	1	N/A	
(3) Unit Cost	1474.20	N/A	N/A
b. (U) Procurement			
(1) Cost (BY88\$)	1014.8	0.0	
(2) Quantity	1	N/A	
(3) Unit Cost	1014.80	N/A	N/A

Since PATRIOT P3I has no approved Acquisition Program Baseline (APB), there is no longer a UCR Baseline. The Federal Acquisition Streamlining Act (FASTA) of 1994 changed the UCR Baseline from the prior annual SAR to the APB.

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PATRIOT P3I, December 31, 1994

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	563.1	1208.9	0.0	1772.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.7	-6.5	-	-7.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.2	4.3	-	+3.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.9	-2.2	-	-4.1
Total Changes	-1.9	-2.2	-	-4.1
Adjustments	-326.0	-1206.7	-	-1532.7
Current Estimate	235.2	-	-	235.2

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PATRIOT P3I, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	460.5	903.2	0.0	1363.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.1	3.2	-	+2.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.1	+3.2	-	+2.1
Total Changes	-1.1	+3.2	-	+2.1
Adjustments	-429.5	-906.4	-	-1335.9
Current Estimate	29.9	0.0	-	29.9

The Adjustments line reflects funding being transferred to the PATRIOT PAC-3 SAR. Although the entire amount is being transferred to PAC-3, the above remaining dollars were counted twice, in the P3I and in the GPALS SARs.

b. (U) Previous Change Explanations -- None.

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PATRIOT P3I, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised escalation indices. (Economic)	N/A	-0.7
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+0.5
BMDO reduction of R&D effort on Remote Launch and Radar Phase III (Estimating)	-2.9	-3.5
Army additional requirement for Product Improvement Program (Estimating)	+1.4	+1.8
RD&E Subtotal	-1.1	-1.9

(2) Procurement

Revised escalation indices. (Economic)	N/A	-6.5
Adjustment for Current & Prior Inflation. (Estimating)	+1.6	+2.2
Army additional requirement for modification procurement (Estimating)	+1.6	+2.1
Procurement Subtotal	+3.2	-2.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1772.00	-7.20	146.60	--	--	3.10	--	--	142.50	1914.50

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RD&E --

(U) <u>FY89 ENGINEERING DEVEL:</u>	Target	Initial Contract Price Ceiling	Qty
RAYTHEON CO., Bedford, MA			
DAAH01-89-C-0458, CPIF	\$159.8	N/A	0
Award: April 10, 1989			
Definitized: April 10, 1989			

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PATRIOT P3I, December 31, 1994

13. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$159.8	N/A	0	\$176.5	\$176.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-14.3	\$-3.9
Cumulative Variances To Date (11/27/94)	<u>\$-17.8</u>	<u>\$-4.1</u>
Net Change	\$-3.5	\$-0.2

Explanation of Change:

This contract contains five independent tasks with varying periods of performance. The tasks are: Pulse Doppler Processor (PDP), Responsive Threat Analysis, Expanded Weapon Control Computer (EWCC), Radar Enhancement Phase III, and Classification, Discrimination, and Identification Phase III (CDI-3). The PDP, EWCC and Responsive Threat tasks have been completed. The PDP, EWCC, and Responsive Threat tasks are Army P3I funded, and the Radar Enhancement and CDI-3 tasks are TMDI funded.

The net change of \$-3.5M in the cumulative unfavorable cost variance is primarily due to overruns in the Radar Enhancement task. The variances are associated with higher levels of testing and evaluation of the subassemblies set; increased costs to monitor subcontractors for the Traveling Wave Tube and heat exchanger; and increased manufacturing cost for incorporation of engineering changes. The net change of \$-0.2M in the cumulative unfavorable schedule variance is due to delays in the CDI-3 task associated with delays in proof-of-design and proof-of-manufacturing documentation releases; and resulting delays in tooling and test equipment designs. There are no significant impacts to the contract because of the unfavorable variances.

This contract will be reported in the PATRIOT PAC-3 SAR.

(U) <u>FY91 ENGINEERING DEVEL:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
RAYTHEON CO., Bedford, MA DAAH01-91-C-0602, CPIF Award: September 25, 1991 Definitized: September 25, 1991	\$171.8	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$171.6	N/A	0	\$172.9	\$173.2

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PATRIOT P3I, December 31, 1994

15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$-3.5
Cumulative Variances To Date (11/27/94)	<u>\$5.1</u>	<u>\$-5.8</u>
Net Change	\$5.1	\$-2.3

Explanation of Change:

This contract contains six independent tasks with varying periods of performance. The tasks are: Guidance Enhancement Missile (GEM), Improved Launcher, Improved Propulsion, Multimode Risk Reduction, Routing Logic Radio Interface Unit (RLRIU) Upgrade, and Components and Hardware. The Improved Launcher, Multimode Risk Reduction, and GEM tasks have been completed. The RLRIU Upgrade and GEM tasks are Army P3I funded, and the other tasks are TMDI funded.

The net change of \$5.1M in the cumulative favorable cost variance reflects less than planned receipt of long lead items associated with the Hardware and Components task, and a slowdown in the Improved Propulsion task as a result of the ASARC decision in Feb 94 to proceed with ERINT as the PAC-3 missile. The net change of \$-2.3M in the cumulative unfavorable schedule variance reflects schedule delays associated with the Improved Propulsion task due to the slowdown. There are no significant impacts to the contract due to the unfavorable variances.

This contract will be reported in the PATRIOT PAC-3 SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 57.1% (8 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 56.2% (\$1075.6 / \$1914.5)

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PATRIOT P3I, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY88-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	466.9	43.9	12.7	37.7	561.2
Procurement	608.7	426.1	213.4	105.1	1353.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1075.6	470.0	226.1	142.8	1914.5

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1988			20.2	20.2	21.1	21.1	21.0	3.0
1989			21.8	21.8	23.4	23.4	23.3	4.2
1990			28.8	28.8	32.1	32.1	31.4	4.1
1991			39.6	39.6	45.9	45.8	45.5	4.3
1992			31.9	31.9	37.9	37.8	37.8	3.0
1993			29.8	29.8	36.3	36.2	36.1	2.7
1994			31.2	31.2	39.0	38.0	28.9	2.0
1995			19.1	19.1	24.6	17.2	1.0	2.7
1996			9.7	9.7	12.9			3.0

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PATRIOT P3I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997			9.3	9.3	12.7			3.0
1998			6.9	6.9	9.7			3.0
1999			6.0	6.0	8.7			3.0
2000			6.7	6.7	10.0			3.0
2001			6.1	6.1	9.3			3.0
Subtot			267.1	267.1	323.6	251.6	225.0	

Appropriation: 2032 Missile Procurement, Army

1991	1		24.3	24.3	28.9	28.9	28.9	4.3
1992			28.9	28.9	35.2	35.2	13.3	3.0
1993			8.0	8.6	10.8	9.9	5.9	2.7
1994			14.4	19.8	25.4	25.1	0.1	2.0
1995			19.8	24.5	32.5	5.2	1.3	2.7
1996			14.3	16.9	22.9			3.0
1997			14.0	20.1	28.0			3.0
1998			13.8	18.3	26.3			3.0
1999			14.0	26.9	39.8			3.0
2000			17.3	19.1	29.0			3.0

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PATRIOT P3I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2001			6.4	6.4	10.0			3.0
Subtot	1		175.2	213.8	288.8	104.3	49.5	
Army	1		442.3	480.9	612.4	355.9	274.5	

Appropriation: 0400 RDT&E, Defense Agencies

1991			16.5	16.5	19.0	19.0	19.0	4.3
1992			56.5	56.5	67.0	67.0	59.9	3.0
1993			24.1	24.1	29.3	28.7	19.2	2.7
1994			17.7	17.7	22.1	21.6	16.8	2.0
1995			54.0	54.0	69.2	27.8	7.7	2.7
1996			23.5	23.5	31.0			3.0
Subtot			192.3	192.3	237.6	164.1	122.6	

Appropriation: 0300 Procurement, Defense Agencies

1992			20.5	20.5	24.9	24.6	20.7	3.0
1993			60.3	60.3	75.2	69.8	41.7	2.7
1994			94.4	94.4	120.7	117.0	57.4	2.0
1995			194.3	194.3	255.1	75.1	5.9	2.7

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PATRIOT P3I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1996			298.3	298.3	403.2			3.0
1997			133.2	133.2	185.4			3.0
Subtot			801.0	801.0	1064.5	286.5	125.7	
DoD			993.3	993.3	1302.1	450.6	248.3	
Grand Total	1		1435.6	1474.2	1914.5	806.5	522.8	

Obligations and Expenditures reflect Program Office records as of 20 Mar 95.

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

Operating and Support Costs are being developed and will be included in the PAC-3 SAR.

- b. (U) Costs -- None.
- c. (U) Contractor Support Costs -- None.

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N-28 STRATEGIC SEALIFT

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: Strategic Sealift

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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Mission and Description		2
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Total Program Cost and Quantity		6
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Program Acquisition Unit Cost History		10
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Production Rate Data		15
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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 WHIDDON
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:

APFN ICN 4557(NDSF)

National Defense Sealift Fund account executed by the Naval Sea Systems Command under procedures directed by the National Defense Sealift Fund Charter dated October 15, 1994. This SAR addresses the Sealift Ship Acquisition Program financed by the NDSF.

5. Related Programs:

NONE

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Strategic Sealift, December 31, 1994

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 --

The JCS Mobility Requirement Study (MRS) defined the overall Strategic Sealift requirements. The Operational Requirements Document (ORD) was validated by the Joint Requirement Oversight Council on June 18, 1992 and updated September 14, 1992 and January 25, 1994. The Acting ASN/RD&A accepted the NPDM of August 17, 1992 as the Milestone I Decision Meeting in his memorandum signed on June 9, 1993. The FY93 Defense Authorization Act established the National Defense Sealift Fund (NDSF) transferring the previously appropriated \$1.875B and the FY93 Defense Appropriation Act provided \$613M for NDSF. Program was designated ACAT IC by USD(A) on March 5, 1993. Milestone II approval was granted for Conversions on July 30, 1993 and New Construction on August 30, 1993. The APB for 20 ships was approved on July 20, 1993. MacGregor-Navire (USA) was competitively awarded a FFP/AF contract on March 29, 1993 for procurement of one shipset of Class Standard Equipment (CSE) with options for up to nineteen shipsets. On July 30, 1993 Newport News Shipbuilding (NNS) and National Steel and Shipbuilding Company (NASSCO) were competitively awarded FPI contracts for detail design and conversion of a total of five foreign built ships (two for NNS and three for NASSCO). On September 2, 1993 Avondale Industries, Inc. (AII) was competitively awarded a FPI with economic price adjustment contract for detail design and construction of one ship with options for five more ships. On September 15, 1993 NASSCO was competitively awarded a FPI with economic price adjustment contract for detail design and construction of one ship with options for five more ships. The remaining two hulls are planned to be competitively awarded for advance procurement in FY98 and ship construction in FY99. After the conversion and new construction awards, it was determined that 19 ships will meet the 5 million square foot requirement. The protest lodged against the new construction contract award on September 17, 1993 was decided in the Navy's favor and the stop work order was lifted on February 1, 1994. A June 94 SAR was submitted to rebaseline the SAR from Planning Estimate (PE) to Development Estimate (DE), and reflect schedule delays in excess of 6 months.

b. Significant Developments Since Last Report --

The revised Acquisition Program Baseline Change reflecting the seven month schedule change was approved by ASN/RD&A on September 26, 1994.

Since then NNS ship delivery schedules slipped an additional four months on the first ship and five months on the second ship. The program is expected to satisfy all mission requirements.

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Strategic Sealift, December 31, 1994

7b. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated September 26, 1994 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
NPDM	AUG 92	AUG 92	AUG 92
Milestone I	SEP 92	SEP 92	AUG 92
CSP/S-24 Conversion Engineering Design Award	OCT 92	OCT 92	OCT 92
CSP/S-24 New Construction Engineering Design Award	NOV 92	NOV 92	NOV 92
Class Standard Equipment Contract Award	MAR 93	MAR 93	MAR 93
Milestone II Conversion	JUN 93	JUN 93	JUN 93
CSP/S-24 Conversion Contract Award	JUL 93	JUL 93	JUL 93
Milestone II New Construction	AUG 93	AUG 93	AUG 93
CSP/S-24 New Construction Contract Award	SEP 93	SEP 93	SEP 93
Conversion Acceptance Trials	NOV 94	JUN 95	JUL 95
OT&E For Conversion	MAY 95	JUN 96	JUN 96
Organic Support Capability (First Conversion Ship)	NOV 95	JUN 96	JUN 96
New Construction Acceptance Trials	AUG 97	AUG 97	AUG 97
IOC (New Construction First Ship Delivery)	OCT 97	OCT 97	OCT 97
OT&E For New Construction	APR 98	APR 98	APR 98
Milestone III (Total Program)	AUG 98	AUG 98	AUG 98
Organic Support Capability (First New Construction Ship)	AUG 98	AUG 98	AUG 98
FOC (New Construction Ships)	JUL 00	JUL 00	JUL 00
Service Depot Support (Total Program)	SEP 00	SEP 00	SEP 00

Schedule reflects the requirement to complete OPEVAL prior to conducting Milestone III.

b. Previous Change Explanations --

Conversion Acceptance Trials were revised from December 94 to July 95; OT&E for conversion was revised from May 95 to June 96; Organic Support Capability for the first conversion ship was revised from November 95 to June 96; and FOC new construction ships was revised

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Strategic Sealift, December 31, 1994

9b. Schedule (Cont'd):

from January 01 to July 00. The revisions occurred because NASSCO's schedule for the first conversion ship slipped seven months due to a slow start-up in detail design, USCG mandated firefighting system changes and late availability of class standard equipment. NNS's conversion schedule slippage is for similar reasons. The NASSCO (new construction) delivery schedule has been revised to reflect a government imposed stop work order issued on September 20, 1993 that resulted from the protest filed by Newport News and Ingalls against the contract award, and its subsequent rescission on February 1, 1994.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

Approved Acquisition Program Baseline dated July 20, 1993.

Approved Program:

NAE Approved Acquisition Program Baseline dated September 26, 1994.

10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
RO/RO CAPACITY					
Total Cargo:					
(After broken stow)					
(M sqft)					
PREPO	2	2	/ 2	TBD	2
SURGE	2	3	/ 3	TBD	3
Cargo capacity per					
ship (K sqft)					
Usable before					
broken stow)					
New Construction					
SURGE	400	400	/ 380	TBD	380
PREPO	350	350	/ 300	TBD	300
Conversion					
SURGE	400	400	/ 300	TBD	300
PREPO	350	350	/ 225	TBD	225
Lift/Cargo Handling					
Capability					
Crane Sets	2	2	/ 2	TBD	2
Stern Ramp	Slewing	Slewing	/ Slewing	TBD	Slewing
Side Port	2	2	/ 2	TBD	2

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Strategic Sealift, December 31, 1994

10a. Performance Characteristics (Cont'd):

	DE	Approved Program <u>Objective/Threshold</u>		Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Cargo Onload/Offload Times (hrs-not to exceed)					
Combined		96	/ 96	TBD	96
Load/Offload at Pier					
Load at Pier	48	N/A	/ N/A	N/A	N/A
Offload at Pier	48	N/A	/ N/A	N/A	N/A
Sustained Speed (knots)	>24	>24	/ 24	TBD	24
Range (nm)	17500	17500	/ 12000	TBD	12000
Ship Size Limitation	<PANAMAX	<PANAMAX	/ PANAMAX	TBD	PANAMAX

b. Previous Change Explanations --

The ORD was revised 25 Jan 94 to reflect a combined time of 96 hours for Onload/Offload.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

Approved Acquisition Program Baseline dated July 20, 1993

Approved Program:

NAE Approved Acquisition Program Baseline dated September 26, 1994.

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Strategic Sealift, December 31, 1994

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	39.3	38.1	38.1
Procurement	5654.5	4781.8	4835.8
New Construction Prepo	(2882.7)		(2358.7)
New Construction Surge	(1133.4)		(1074.7)
Conversion	(1638.4)		(1402.4)
Total Sailaway	(5654.5)		(4835.8)
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	5693.8	4819.9	4873.9
 Escalation	894.6	905.2	937.0
Development (RDT&E)	(0.6)	(1.8)	(1.8)
Procurement	(894.0)	(903.4)	(935.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6588.4	5725.1	5810.9

Changes from the previous report are based on the following factors:
an assessment that 19 ships, vice the original projected 20, will be
sufficient to meet the established Mobility Requirements Study; a
shift in schedule award for 2 new construction ships from FY97 to
FY99; and advanced planning funding added in FY98 to support the FY99
ship award and delivery schedule.

b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>20</u>	<u>19</u>	<u>19</u>
Total	20	19	19

c. Foreign Military Sales/International Cooperative Programs -- NONE

d. Nuclear Costs -- None.

e. References --

Development Estimate:

Approved Acquisition Program Baseline dated July 20, 1993

Approved Program:

NAE Approved Acquisition Program Baseline dated September 26, 1994.

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Strategic Sealift, December 31, 1994

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY92\$)	4873.9	4819.9	
(2) Quantity	19	19	
(3) Unit Cost	256.52	253.68	1.12
b. Procurement			
(1) Cost (BY92\$)	4835.8	4781.8	
(2) Quantity	19	19	
(3) Unit Cost	254.52	251.67	1.13

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Strategic Sealift, December 31, 1994

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.9	6548.5	0.0	6588.4
Previous Changes:				
Economic	+1.2	+350.6	-	+351.8
Quantity	-	-351.5	-	-351.5
Schedule	-	+61.7	-	+61.7
Engineering	-	-	-	-
Estimating	-1.2	-924.1	-	-925.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-863.3	-	-863.3
Current Changes:				
Economic	-	-17.0	-	-17.0
Quantity	-	34.7	-	+34.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	68.1	-	+68.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+85.8	-	+85.8
Total Changes	-	-777.5	-	-777.5
Current Estimate	39.9	5771.0	-	5810.9

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Strategic Sealift, December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.3	5654.5	0.0	5693.8
Previous Changes:				
Quantity	-	-238.6	-	-238.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.2	-634.1	-	-635.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	-872.7	-	-873.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	54.0	-	+54.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+54.0	-	+54.0
Total Changes	-1.2	-818.7	-	-819.9
Current Estimate	38.1	4835.8	-	4873.9

b. Previous Change Explanations --

RDT&E

Economic: Change in escalation indices
 Estimating: Adjustment for current & prior inflation

Procurement

Economic: Revised escalation rates
 Quantity: Variance resulted from a decrease of 1 unit
 Schedule: Schedule slippage for conversion ships
 Estimating: Adjustments were made for current and prior inflation and the exclusion of the MSNAP and Sealift Ship Technology Program.

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Strategic Sealift, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised escalation rates (Economic)	N/A	-17.0
Change in annual procurement buy profile/schedule deviation with Advance Procurement in FY98 (Quantity)	--	+34.7
Refinement of prior estimates (Estimating)	+54.0	+68.1
Procurement Subtotal	+54.0	+85.8

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
329.42	--	--	--	--	--	--	--	--	329.42

b. Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
329.42	17.62	0.67	3.25	--	-45.12	--	--	-23.58	305.84

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>Class Standard Equip.:</u> MacGregor-NAVIRE (USA), Cranford, NJ N00024-93-C-2220, FFP/AF Award: March 29, 1993 Definitized: March 29, 1993	\$13.2	N/A	1

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Strategic Sealift, December 31, 1994

15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$89.5	N/A	8	\$89.5	\$89.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.4	\$-0.2
Cumulative Variances To Date (11/30/94)	<u>\$2.1</u>	<u>\$-1.7</u>
Net Change	\$0.7	\$-1.5

Explanation of Change:

Cost variance is due to contract modifications which have not been finally adjudicated. Until then, amount of ECP 2/3/4 will be carried in undistributed budget. Actuals are being incurred even though budgets have not been spread.

Since the latest CSSR was received, a contract option was exercised in Dec 94 to add 4 shipsets.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>CONVERSIONS:</u> NASSCO, SAN DIEGO, CA N00024-93-C-2214, FPI 50/50 SHARE Award: July 30, 1993 Definitized: July 30, 1993	\$632.1	\$761.1	3

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$632.1	\$761.1	3	\$614.9	\$699.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.2	\$-0.8
Cumulative Variances To Date (11/06/94)	<u>\$-22.1</u>	<u>\$-10.6</u>
Net Change	\$-17.9	\$-29.8

Explanation of Change:

NASSCO's schedule for the first ship has slipped seven months due to a slow start-up in detail design, USCG mandated firefighting system changes, late availability of class standard equipment design information, and late availability of Contractor Furnished Material to support start of construction. The two follow ships will have similar delays of seven and a half months and eight months, respectively. Contractual action to incorporate NASSCO's revised schedule is ongoing. Schedule remains challenging and could slip further if engineering and production efforts do not materialize.

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15. Contract Information (Cont'd):

<u>CONVERSIONS:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS, VA				
N00024-93-C-2216, FPI 50/50 SHARE	\$423.5	\$478.8	2	
Award: July 30, 1993				
Definitized: July 30, 1993				
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$423.5	\$478.8	2	\$441.5	\$494.8
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-5.8	\$-29.5
Cumulative Variances To Date (10/23/94)			<u>\$-22.6</u>	<u>\$-18.7</u>
Net Change			\$-16.8	\$10.8

Explanation of Change:

NNS's schedule for the first ship has slipped for a total of eleven months due to detail design and production work involving strengthening the double bottom and stern structure, unplanned USCG mandated firefighting system changes, and late availability of class standard equipment design information. The follow ship will have a delay of eight months.

<u>NEW CONSTRUCTION:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
AVONDALE IND., INC., NEW ORLEANS, LA				
N00024-93-C-2205, FPI 50/50 SHARE	\$262.0	\$303.0	1	
Award: September 2, 1993				
Definitized: September 2, 1993				
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$262.0	\$303.0	1	\$232.0	\$262.3
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$0.0	\$0.6
Cumulative Variances To Date (10/31/94)			<u>\$-0.7</u>	<u>\$-2.0</u>
Net Change			\$-0.7	\$-2.6

Explanation of Change:

No significant variances at this time.

A contract option was exercised 27 Sep 94 for 2 additional new construction ships making a total of 3 ships now under contract.

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15. Contract Information (Cont'd):

Follow on CPR's will include these additional ships.

<u>NEW CONSTRUCTION:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
NASSCO, SAN DIEGO, CA				
N00024-93-C-2203, FPI 50/50 share	\$267.1	\$315.8	1	
Award: September 15, 1993				
Definitized: February 1, 1994				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$267.1	\$315.8	1	\$242.9	\$265.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.4	\$0.0
Cumulative Variances To Date (11/06/94)	\$-0.9	\$0.0
Net Change	\$-0.5	\$0.0

Explanation of Change:

The Contract was awarded on 15 Sept 1993, a protest lodged with GAO on 17 Sept 1993 and a stop work order issued on 20 Sept 1993. The stop work order was lifted on 1 Feb 1994. Work resumed on the same day.

A request for equitable adjustment contract modification as a result of the stop work order has been incorporated into the contract and resulted in a revised delivery date of Mar 98 for the first ship and an average six month slip in originally negotiated dates for each subsequent hull.

A contract option was exercised 20 Oct 94 for 2 additional new construction ships making a total of 3 ships now under contract. Follow on CPR's will include these additional ships.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 50.0% (4 yrs/8 yrs)
- (2) Percent Program Cost Appropriated: 57.5% (\$3338.6 / \$5810.9)

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Strategic Sealift, December 31, 1994

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-99)</u>	<u>Total</u>
RDT&E	39.9	-	-	-	39.9
Procurement	3298.7	596.1	603.8	1272.4	5771.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3338.6	596.1	603.8	1272.4	5810.9

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Bsc1 Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1992				38.1	39.9	39.9	39.9	2.8
Subtot				38.1	39.9	39.9	39.9	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1993	9		2446.0	2196.0	2463.5	2440.6	629.8	3.2
1994				250.0	288.8	288.8		4.1
1995	2		459.3	459.3	546.4	33.5		2.7
1996	2		486.5	486.5	596.1			3.0
1997	2		478.4	478.4	603.8			3.0

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Strategic Sealift, December 31, 1994

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 (Cont'd)

1998	2		524.2	524.2	681.4			3.0
1999	2		441.4	441.4	591.0			3.0
Subtot	19		4835.8	4835.8	5771.0	2762.9	629.8	
Grand Total	19		4835.8	4873.9	5810.9	2802.8	669.7	

The appropriation name in Section 16c. should reflect "4557 National Defense Sealift Fund (NDSF)" vice "1611 Shipbuilding and Conversion, Navy".

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

- a. Assumptions and Ground Rules --

CSP-24. The CSP-24 is prepositioned with military cargo. In Prepositioning Mode, the ship will be deployed with cargo in the holds in a forward area. 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 and the summer environmental condition is assumed year round. The CSP-24 will operate 33 percent of the time underway and 67 percent of the time in port. While underway, 67

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18a. Operating and Support Costs (Cont'd):

percent of the time the ship will operate at 15 knots and 33 percent of the time will operate at 24 knots.

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 and the summer environmental condition is assumed 50 percent of the in port and underway periods and assumed to be 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, deployment, 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 1992 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	6.1	1.6
Unit Level Consumption	4.0	1.6
Depot Maintenance	1.5	1.3
Sustaining Investment	0.2	0.1
Sys & Inventory Mgmt Con	0.1	0.1
Indirect O&S	0.9	1.3
Total	12.8	6.0

c. Contractor Support Costs -- None.

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A-25 SCAMP

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: SCAMP

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

Single Channel Anti-jam ManPortable (SCAMP) Terminal -
Block I

2. DoD Component: Army

Joint Participants:

Air Force, Joint Communications Support Element,
Marine Corps.

3. Responsible Office and Telephone Number:

Project Manager Milstar (Army)	COL William F. Jalesle
PEO Communications Systems	Assigned: May 8, 1992
ATTN: SFAE-CM-MSA	AV 992-9767 X4001
Fort Monmouth; NJ 07703-5508	COMM 908-532-9767 X4001

4. Program Elements/Procurement Line Items:

ROD&E:

PE 0303142 (Shared) Project D386, D455 (Shared), D2RT

PROCUREMENT:

APPN 3080 ICN 33601F (Air Force) (Shared)
APPN 1810 ICN 33113N (Navy) (Shared)
APPN 2035 ICN BC4003 (Army)
APPN 2035 ICN BS9718 (Army)
APPN 1109 ICN 402700 (Navy) (Shared)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DASD-PA)
DEPARTMENT OF DEFENSE

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5. Related Programs:

US Air Force Milstar Space and Mission Control Segment.

6. Mission and Description:

This program is a 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 Commander in Chiefs (CINCs) and other multi-service high priority users to transmit secure 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). It will interface with Common Hardware/Software devices such as the Lightweight Computer Units and the Hand-Held Terminal Unit.

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 Force Projection Command, Control, Communications, Computers & Intelligence (C4I) support 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. An ASARC Milestone II Decision Review was held on 18 May 1992, allowing the Block I program to proceed into Phase II, Engineering and Manufacturing Development (EMD). The Acquisition Decision Memorandum was signed on 22 May 92. Two competitive contracts were awarded 17 September 92 to Lockheed Missiles and Space Company, Inc., Sunnyvale, CA, and General Electric 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 became effective on 2 April 1993. Preliminary Design Reviews were held in March 1993 by Lockheed and in August 1993 by Martin Marietta. The Lockheed Corporation contract was terminated for convenience on 16 September 1993 due to mismanagement and escalating cost growth. Martin Marietta continued their Cost Plus Fixed Fee EMD contract (DAAB07-92-C-B754) for 15 terminals.

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7a. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --
The Lockheed Corporation submitted their termination proposal on 14 October 1994. Termination settlement is expected in September 1995.

The SCAMP Block I one-year Army Production buyout planned for FY96 (150 terminals) changed to a two year buy in FY96/97. The total quantity multiservice buy changed from 456 terminals to 312 terminals.

On 26 September 1994, PM Milstar (Army) was informed that the FY95 Appropriations Bill decremented \$27M (50%) in Program Element 0303142A, Satellite Communications Ground Environment for the Milstar (Army) programs (i.e. SMART-T, Project D384 and SCAMP, Project D386). As a result, PM Milstar (Army) performed a complete reassessment of the program. A briefing was presented to the Army Acquisition Executive on 26 October 1994. A restructure was approved and the Martin Marietta contract was terminated for convenience. On 15 November 1994, an Acquisition Decision Document was signed to proceed with a competitive Production award in February 1996 to take advantage of multiple contractors' efforts in this work. A hardcopy version of the SCAMP Block I Milestone III Production Acquisition Program Baseline was approved. Engineering Feasibility Efforts were approved to begin in FY96.

The Project Manager (Army) Office is proceeding to competitively procure 312 multiservice SCAMP Block I terminals in FY96/97. An Advanced Planning Briefing to Industry was held at Fort Monmouth, NJ on 29 November 1994. The initial solicitation documentation was released to Industry in December 1994. The fixed price type Production award remains on track for FY96.

On 15 November 1994, the Army Acquisition Executive requested that the Defense Acquisition Executive redesignate the SCAMP Block I Production phase from an Acquisition Category (ACAT) IC program to an ACAT III program. It is anticipated that this will be the final SAR for the Block I program.

A future manpackable Block II terminal will have a maximum 15 pound weight with the same operational capabilities as Block I. Block II Engineering & Manufacturing Development (EMD) and Production are not a part of this report. This system will be considered for the Major Defense Acquisition Program (MDAP) List.

The SCAMP system is expected to satisfy mission requirements.

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7c. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are both schedule and performance threshold breaches to the Acquisition Program Baseline (APB) dated 22 May 1992. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Critical Design Review Complete	MAR 94	MAR 94	AUG 94 (Ch-1)
Delivery of GT Units	FEB 95	FEB 95	N/A (Ch-2)
Government Technical Test			
Start	FEB 95	FEB 95	N/A (Ch-2)
Complete	MAY 95	MAY 95	N/A (Ch-2)
Delivery of OT Units	AUG 95	AUG 95	N/A (Ch-2)
Operational Test			
Start	AUG 95	AUG 95	N/A (Ch-2)
Complete	NOV 95	NOV 95	N/A (Ch-2)
Delivery of RDGT Units	FEB 96	FEB 96	N/A (Ch-2)
Milestone III			
Milestone III ASARC Review	FEB 96	FEB 96	NOV 94 (Ch-3)
Full Rate Production Award	MAR 96	MAR 96	FEB 96 (Ch-3)
First Production Delivery	OCT 97	OCT 97	JUL 97 (Ch-3)
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/ Terminal IOC: Date by which initial training and provisioning

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SCAMP, December 31, 1994

9a. Schedule (Cont'd):

have been completed.

b. Previous Change Explanations --

Preliminary Design Review (PDR) dates were specified as contractor proposed in the contract. Both Lockheed and GE successfully completed PDR in March 1993.

Critical Design Review (CDR) completion dates were changed from March 1994 to May 1994 as an estimate of completion for both hardware and software CDRs.

c. Current Change Explanations --

(Ch-1) Critical Design Review (CDR) completion date was changed from May 1994 to August 1994. CDR completion was achieved in August 1994.

(Ch-2) Development effort that was scheduled to end in November 1995 was terminated on 26 October 1994.

(Ch-3) Reflects the new Production Acquisition Program Baseline (APB) approved on 15 November 1994, which changed the Milestone III ASARC Review from February 1996 to November 1994; changed the Full Rate Production Award from March 1996 to February 1996; and changed the First Production Delivery from October 1997 to July 1997.

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 May 22, 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program		Demon- strated	Current
		<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>
Data Rate (bps)	75-2400	75-2400	/ 75-2400	N/A	75-2400
Set-up Time (min)	5	5	/ 10	N/A	<7
Tear-down Time (min)	5	5	/ 10	N/A	5
Voice Quality @ 2400 bps	>/= STU III	>/= STU STU III	/ =STU III	N/A	>/= STU III
Reliability MTBF 1/	1200	1200	/ 900	N/A	1200

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Embedded COMSEC	Required	Required / Required	N/A	Required	
			N/A		
Battery Life (hrs)	24	24 / 12	N/A	13	
Area Common User	75-2400	75-2400 / 75-2400	N/A	75-2400	
Interface (bps) (data only)					
Weight (lbs)					
Block I	30	30 / 30	N/A	32.5	(Ch-1)
Block II	12	12 / 15	TBD	N/A	(Ch-2)

ACRONYMS:

bps - Bits Per Second

MTBF - Mean Time Between Failures

MTBOMF- Mean Time Between Operational Mission Failures

STU - Secure Telephone Unit

FOOTNOTE:

1/ Reliability MTBF: 900 hours MTBF in order to support the users requirement of 600 hours MTBOMF.

b. Previous Change Explanations --

Set-up Time: Current Estimate changes the objective from 5 minutes to 7 minutes to denote specification requirements in the contract for set-up time.

Battery Life: Current estimate from 12 hours to 13 hours to denote the Contractors' estimate - at worst case temperature for battery life.

Block I Weight: Current estimate changes APB objective weight from 30 lbs. to 32.5 lbs.

c. Current Change Explanations --

(Ch-1) Block I Weight changed from 30 lbs. to 32.5 lbs. to reflect contractor's estimate. This development contract was terminated on 26 October 1994.

(Ch-2) Current Estimate Block II Weight changed from 12-15 lbs. to Not Applicable. Block II is no longer part of the SAR or the APB.

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10d. Performance Characteristics (Cont'd):

d. References --

Development Estimate:

AAE Acquisition Program Baseline (APB) dated 22 May 92.

ASARC Milestone II ADM Approval dated 26 May 92.

Approved Program:

AAE Approved Acquisition Program Baseline dated May 22, 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	153.7	153.7	111.3
Procurement	163.5	163.5	109.0
Recurring Rollaway	(116.5)		(69.9)
Other Rollaway	(21.2)		(19.9)
Total Rollaway	(137.7)		(89.8)
Support Costs	(2.5)		(3.5)
Other System Costs	(12.0)		(4.3)
Total Other Wpn Sys	(14.5)		(7.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(11.3)		(11.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	317.2	317.2	220.3
 Escalation	55.3	55.3	31.8
Development (RDT&E)	(14.0)	(14.0)	(10.1)
Procurement	(41.3)	(41.3)	(21.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	372.5	372.5	252.1
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>456</u>	<u>456</u>	<u>312</u>
Total	456	456	312

There has been no approved LRIP quantity for this program.

c. Foreign Military Sales/International Cooperative Programs --
None.

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11d. Total Program Cost and Quantity (Cont'd):

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 May 22, 1992.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 92 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY92\$)	220.3	317.2	
(2) Quantity	312	456	
(3) Unit Cost	0.706	0.696	1.506
b. Procurement			
(1) Cost (BY92\$)	109.0	163.5	
(2) Quantity	312	456	
(3) Unit Cost	0.349	0.359	-2.564

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	167.7	204.8	0.0	372.5
Previous Changes:				
Economic	-1.8	-7.1	-	-8.9
Quantity	-	-	-	-
Schedule	-	-0.8	-	-0.8
Engineering	-	-	-	-
Estimating	-39.1	-3.7	-	-42.8
Other	-	-	-	-
Support	-	+18.3	-	+18.3
Subtotal	-40.9	+6.7	-	-34.2
Current Changes:				
Economic	-0.6	-4.3	-	-4.9
Quantity	-	-24.6	-	-24.6
Schedule	-	0.3	-	+0.3
Engineering	-	-	-	-
Estimating	-4.8	-25.0	-	-29.8
Other	-	-	-	-
Support	-	-27.2	-	-27.2
Subtotal	-5.4	-80.8	-	-86.2
Total Changes	-46.3	-74.1	-	-120.4
Current Estimate	121.4	130.7	-	252.1

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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	-35.8	-7.7	-	-43.5
Other	-	-	-	-
Support	-	+15.8	-	+15.8
Subtotal	-35.8	+8.1	-	-27.7
Current Changes:				
Quantity	-	-20.7	-	-20.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-6.6	-19.5	-	-26.1
Other	-	-	-	-
Support	-	-22.4	-	-22.4
Subtotal	-6.6	-62.6	-	-69.2
Total Changes	-42.4	-54.5	-	-96.9
Current Estimate	111.3	109.0	-	220.3

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices; Adjustment for Negative Program Change.

Estimating: FY92 funds turned in (reprogramming action) due to delay in development contract award; FY93 funding reduction affecting the Block II effort; refinement of the Baseline Cost Estimate (BCE); and FY94-FY97 funding reductions; Funding Reduction due to termination of Lockheed contract.

Procurement

Economic: Revised escalation indices; Adjustment for Negative Program Changes.

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13b. Cost Variance Analysis (Cont'd):

Schedule: Change in Marine Corps buy profile.
 Estimating: FY 94-95 funding reduction; revised Marine Corp
 funding; and reduction in first unit costs
 estimate; Revised estimate due to one year buy
 extension of Marine Corps buy.
 Support: Revised Initial Spares and Other Weapon Systems
 Cost; Decrease due to refinement of logistical
 support requirements.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.6
Adjustment for Current & Prior Inflation (Estimating)	+0.4	+0.4
Terminated EMD contract and associated System Project Management decreases. (Estimating)	-14.6	-16.0
Increased BLK II Engineering Feasibility Efforts. (Estimating)	+7.6	+10.8
RDT&E Subtotal	<u>-6.6</u>	<u>-5.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.6
Variance from decrease of from 232 to 154 in Air Force units and from 66 to 0 in Marine Corps units due to funding constraints/downsizing. (Quantity)	-20.7	-24.6
Change buy profile from one year (96) to two years (96 and 97). (Schedule)	--	+0.3
Variance resulting from a decrease in total quantity allocation of terminals and their associated costs. (Estimating)	-19.5	-25.0
Initial Spares Cost reduced due to reduction in total production quantities. (Support)	-8.5	-9.8
Weapons Support costs decreased due to a reduction in total production quantity. (Support)	-13.9	-17.4
Procurement Subtotal	<u>-62.6</u>	<u>-80.8</u>

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.817	-0.044	0.299	-0.002	--	-0.233	--	-0.029	-0.009	0.808

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

SCAMP-BLOCK I (MMC):
Martin Marietta Corp., Camden, NJ
DAAB07-92-C-B754, CPIF
Award: September 17, 1992
Definitized: September 17, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$28.0	N/A	15

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$28.8	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
N/A	N/A

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Current Contract Price/Estimated Price at Completion: The Martin Marietta Corporation CPIF contract (DAAB07-92-C-B754) was terminated for convenience on 26 October 1994. Martin Marietta is currently preparing their termination proposal. This will be the last time this contract will appear in the SAR.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 50.0% (5 yrs/10 yrs)
- (2) Percent Program Cost Appropriated: 33.4% (\$84.3 / \$252.1)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2000)</u>	<u>Total</u>
RDT&E	84.3	10.2	2.9	24.0	121.4
Procurement	-	42.6	56.3	31.8	130.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	84.3	52.8	59.2	55.8	252.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- tated	Ex- pended	

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	21.9	3.0
1993				22.1	23.1	22.9	21.5	2.7
1994				30.8	33.0	33.0	23.2	2.0
1995				0.1	0.1	0.1	0.1	2.7
1996				9.0	10.2			3.0
1997				2.5	2.9			3.0
1998				6.1	7.4			3.0
1999				4.7	5.8			3.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligation	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

2000				8.4	10.8			3.0
Subtot				111.3	121.4	84.1	70.3	

FY95 Total Program dollars does not reflect a 4 January 1995 below threshold reprogramming action within Program Element 0303142A of \$3.071M from D456 to D386.

Expenditures and obligations reflect program office records as of 31 Dec 1994.

Appropriation: 2035 Other Procurement, Army

1996	57	6.0	14.4	22.2	25.8			3.0
1997	93	7.3	32.6	27.1	32.5			3.0
1998				13.4	16.5			3.0
1999				10.9	13.9			3.0
2000				0.8	1.1			3.0
Subtot	150	13.3	47.0	74.4	89.8			
Army	150	13.3	47.0	185.7	211.2	84.1	70.3	

Appropriation: 1810 Other Procurement, Navy

1996	8		1.3	1.7	2.0			3.0
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SCAMP, December 31, 1994

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 (Cont'd)

Subtot	8		1.3	1.7	2.0			
Navy	8		1.3	1.7	2.0			

This Navy appropriation has been designated to fund the JCSE requirements.

Appropriation: 3080 Other Procurement, Air Force

1996	45	2.9	7.8	12.7	14.8			3.0
1997	109	3.7	13.8	19.9	23.8			3.0
1998				0.1	0.1			3.0
1999				0.2	0.2			3.0
Subtot	154	6.6	21.6	32.9	38.9			
USAF	154	6.6	21.6	32.9	38.9			
Grand Total	312	19.9	69.9	220.3	252.1	84.1	70.3	

17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. Approved Design-to-Cost Objective -- N/A.

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Based on the SCAMP Program Office Estimate (POE) dated January 1994, the following assumptions were determined: 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 14.6. 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 \$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.

There is no antecedent system.

b. Costs -- (FY 1992 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 -- None.

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A-27 SMART-T

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: SMART-T

AS OF DATE: December 31, 1994

SUBJECT	PAGE
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Program Acquisition Unit Cost History	12
Contract Information	13
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Production Rate Data	19
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1. Designation and Nomenclature (Preferred Name):
Secure Mobile Anti-Jam Reliable Tactical Terminal

CLEARED
FOR OPEN PUBLICATION

2. DoD Component: Army

MAR 24 1995 5

Joint Participants:

U.S. Air Force, U.S. Marine Corps, U.S. Navy, Joint ~~DIRECTORATE FOR INFORMATION AND SECURITY POLICY (DIPSI)~~
Communications Support Element, Other DoD Special Users ~~DEPARTMENT OF DEFENSE~~

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 992-9767 COMM (908) 532-9767
Fort Monmouth, NJ 07703-5508	

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0303142A (Shared) Project D384, D455* (Shared), D2PT

PROCUREMENT:

APPN 0300 ICN 1130453BB (DCA/DNA) NAVY SPECIAL FORCES
APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy
APPN 2035 ICN BB5777 (Army) (Shared) **
APPN 2035 ICN BC4002 (Army)
APPN 3080 ICN 21131F (Air Force) (Shared) **
APPN 3080 ICN 33601F (Air Force) ***
APPN 2035 ICN BS9720 (Army)

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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 is funded under Project D384.

**The Joint Communications Support Element (JCSE) requirements are funded with Army and Air Force funds managed by JCSE.

***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 and operations. This direction/guidance led to a number of actions for improving Force Projection for Command, Control, Communications, Computer and Intelligence (C4I) support to include the need to

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7a. Program Highlights (Cont'd):

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. The Army Operational Requirements Document (ORD) was finalized 10 March 1992. 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.

b. Significant Developments Since Last Report --
Raytheon Corporation (Marlborough, MA) completed Software Critical Design Review (CDR) in March 1994.

Rockwell International (Richardson, TX) completed Hardware CDR in January 1994, and Software CDR in March 1994.

In November/December 1994, both contractors successfully demonstrated Medium Data Rate (MDR) capability with the Lincoln Laboratory developed satellite simulator. Mobile Subscriber Equipment (MSE) compatibility was also demonstrated.

The SMART-T system is expected to satisfy mission requirements.

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 <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
MDR Study	FEB 91	FEB 91	FEB 91
Market Survey	SEP 91	SEP 91	SEP 91

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Preliminary Design Review	JUL 93	JUL 93	MAY 93
Critical Design Review	MAR 94	MAR 94	MAR 94
DT&E			
Start	JAN 95	JAN 95	SEP 94
Complete	OCT 95	OCT 95	DEC 95
EDM Deliveries	NOV 95	NOV 95	FEB 96
LRIP Decision	DEC 95	DEC 95	FEB 96
Low Rate Production Contract Award	JAN 96	JAN 96	MAR 96
FAT			
Start	AUG 97	AUG 97	OCT 97
Complete	JAN 98	JAN 98	MAR 98
LRIP First Delivery	JAN 98	JAN 98	MAR 98
LDR IOT&E			
Start	FEB 98	FEB 98	APR 98
Complete	MAY 98	MAY 98	JUL 98
Milestone III ASARC Review	SEP 98	SEP 98	OCT 98
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.

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9b. Schedule (Cont'd):

b. Previous Change Explanations --

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 shift in all subsequent milestones through Milestone III ASARC Review.

Critical Design Review (CDR) changed from December 1993 to March 1994. Initially, credit for having satisfied requirements for CDR and Preliminary Design Review (PDR) was to be taken when the Hardware PDR and CDR were complete. However, it was determined that program status would be more accurately reflected if credit for satisfying PDR and CDR milestones was not claimed until both the Hardware and Software reviews were complete.

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 May 22, 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program		Demonstrated Perf	Current Estimate
		Objective/Threshold			
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	1024	1544
Interface Capability Configuration (Full System)	With MSE HMMWV	With MSE HMMWV	/ With MSE HMMWV	With MSE HMMWV	With MSE HMMWV

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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
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] by 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.

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10d. Performance Characteristics (Cont'd):

Approved Program:

AAE Approved Acquisition Program Baseline dated May 22, 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	206.2	206.2	195.5
Procurement	598.2	598.2	558.7
Recurring Rollaway	(397.1)		(306.5)
Other Rollaway	(119.7)		(138.7)
Total Rollaway	(516.8)		(445.2)
Support Cost	(1.9)		(15.0)
Other System Cost	(30.2)		(24.2)
Total Other Wpn Sys	(32.1)		(39.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(49.3)		(74.3)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	804.4	804.4	754.2
 Escalation	222.8	222.8	179.9
Development (RDT&E)	(19.2)	(19.2)	(20.0)
Procurement	(203.6)	(203.6)	(159.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1027.2	1027.2	934.1

RDT&E includes funding for Demand Assigned Multiple Access (DAMA)
Feasibility Engineering Efforts performed in FY93/94.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>364</u>	<u>364</u>	<u>345</u>
Total	364	364	345

The unit of measure for SMART-T is terminals.

At the Milestone II Decision Review on 26 May 1992, a total of 52 Army terminals were approved by the Army Acquisition Executive for Low Rate Initial Production (LRIP). The Army LRIP quantity would satisfy training requirements and equip the Army's Power Projection Contingency Corps.

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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 May 22, 1992.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 92 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY92\$)	754.2	804.4	
(2) Quantity	345	364	
(3) Unit Cost	2.186	2.210	-1.077
b. Procurement			
(1) Cost (BY92\$)	558.7	598.2	
(2) Quantity	345	364	
(3) Unit Cost	1.619	1.643	-1.460

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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	-3.1	-23.9	-	-27.0
Quantity	-	+5.5	-	+5.5
Schedule	-	+4.2	-	+4.2
Engineering	-	-	-	-
Estimating	-50.8	-95.9	-	-146.7
Other	-	-	-	-
Support	-	+81.6	-	+81.6
Subtotal	-53.9	-28.5	-	-82.4
Current Changes:				
Economic	-0.7	-14.0	-	-14.7
Quantity	-	-26.7	-	-26.7
Schedule	-	11.2	-	+11.2
Engineering	-	-	-	-
Estimating	44.7	6.5	-	+51.2
Other	-	-	-	-
Support	-	-31.7	-	-31.7
Subtotal	+44.0	-54.7	-	-10.7
Total Changes	-9.9	-83.2	-	-93.1
Current Estimate	215.5	718.6	-	934.1

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	206.2	598.2	0.0	804.4
Previous Changes:				
Quantity	-	+4.2	-	+4.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-46.7	-65.2	-	-111.9
Other	-	-	-	-
Support	-	+57.6	-	+57.6
Subtotal	-46.7	-3.4	-	-50.1
Current Changes:				
Quantity	-	-20.5	-	-20.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	36.0	9.9	-	+45.9
Other	-	-	-	-
Support	-	-25.5	-	-25.5
Subtotal	+36.0	-36.1	-	-0.1
Total Changes	-10.7	-39.5	-	-50.2
Current Estimate	195.5	558.7	-	754.2

b. Previous Change Explanations --

RD&E

Economic: Revised escalation indices.

Estimating: FY92 funds turned in (reprogramming action) due to delay in development contract award; funding reduction to accommodate Small Business Innovative Research (SBIR) allocation; FY93-95 funding reductions; funding reduction to accommodate inflation tax allocation; and FY93 unfunded Demand Assigned Multiple Access (DAMA) engineering feasibility efforts. Revised estimate for Current and Prior Inflation offset and to refine Engineering Change Proposals (ECPs).

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13b. Cost Variance Analysis (Cont'd):

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Quantity: JCSE procurement increased from 8 to 10. Army procurement increased from 208 to 209.

Schedule: Annual procurement buy profile changed.

Estimating: FY94-95 funding reductions; and reduction in first unit cost estimate. Refined Engineering Change Proposals (ECPs) due to decrease in funding; shortened system life from 20 to 15 years; and corrected error in Dec 92 SAR (reclassified elements from rollaway to support costs).

Support: Revised initial spares and other weapon system costs. Reduced data costs.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-0.7
Adjustment for Current & Prior Inflation. (Estimating)	+0.7	+0.7
Increased requirements for Joint Staff mandated Joint Interoperability Standards, Network Control and Payload Specification changes. (Estimating)	+35.3	+44.0
 RDT&E Subtotal	 +36.0	 +44.0

(2) Procurement

Revised escalation indices. (Economic)	N/A	-12.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	-2.0
Quantity Changes	-45.4	-60.8
Air Force appropriation reduction in quantity from 102 to 76 (AF requirements from 97 to 73; JCSE requirements from 5 to 3.) (Quantity)	-24.4	-31.8
Army appropriation quantity reduction from 219 to 217 (JCSE requirements from 5 to 3; Army 209 unchanged; Other DOD Special Users 5 unchanged.) (Quantity)	-0.7	-1.1

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Marine Corps appropriation quantity increase from 42 to 48. (Quantity)	+4.6	+6.2
Air Force appropriation decrease in GFE, recurring engineering, quality control, and ECP costs related to quantity decrease. (Estimating)	-10.7	-16.3
Marine Corps appropriation decrease in GFE, contractor system project management, quality control, and ECP costs related to change in annual procurement buy profile. (Estimating)	-3.3	-4.6
Estimating allocation resulting from quantity change due to Marine Corp quantity increase (i.e. recurring engineering costs.) (Estimating)	+3.4	+4.5
Decreased initial spares requirements based on quantity reduction. (Support)	-14.3	-17.7
Change in annual procurement buy profile related to SMART-T (Schedule)	--	+11.2
Increased Army GFE costs related to the HMMWV, as well as additional Milstar Intersegment Tests. (Estimating)	+20.5	+22.9
Decreased data costs due to refinement of requirements in cost estimate. (Support)	-11.2	-14.0
Procurement Subtotal	-36.1	-54.7

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.822	-0.121	0.094	0.045	--	-0.277	--	0.145	-0.114	2.708

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15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

SMART-T DEV (Raytheon):
Raytheon Company, Marlborough, MA
DAAB07-93-C-B751, CPIF W/T&M
Award: November 9, 1992
Definitized: November 9, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$35.0	N/A	6

Current Contract Price		
Target	Ceiling	Qty
\$37.8	N/A	6

Estimated Price At Completion	
Contractor	Program Manager
N/A	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Current Contract price changed from \$36.3M to \$37.8M. The contract was modified to incorporate Milstar specification changes.

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):
Rockwell, Richardson, TX
DAAB07-93-C-B752, CPIF W/T&M
Award: November 9, 1992
Definitized: November 9, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$46.9	N/A	6

Current Contract Price		
Target	Ceiling	Qty
\$49.9	N/A	6

Estimated Price At Completion	
Contractor	Program Manager
N/A	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Reported Current Contract Price changed from \$50.3M to \$49.9M. The December 1993 SAR incorrectly reported the Estimate Price instead of

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15. Contract Information (Cont'd):

the Target Price (i.e., \$47.5M). Contract Target Price increased due to the execution of contract modifications to incorporate Milstar specification changes.

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).

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 15.4% (4 yrs/26 yrs)

(2) Percent Program Cost Appropriated: 15.8% (\$147.2 / \$934.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2017)</u>	<u>Total</u>
RDT&E	147.2	21.9	11.1	35.3	215.5
Procurement	-	69.7	85.5	563.4	718.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	147.2	91.6	96.6	598.7	934.1

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SMART-T, December 31, 1994

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: 2040 Research, Development, Test + Eval, Army

1992				19.6	20.0	20.0	19.5	3.0
1993				42.3	44.3	44.3	40.1	2.7
1994				52.4	56.1	56.1	46.2	2.0
1995				24.3	26.8	14.1	0.1	2.7
1996				19.3	21.9			3.0
1997				9.5	11.1			3.0
1998				15.5	18.7			3.0
1999				0.2	0.2			3.0
2000				3.7	4.7			3.0
2001				3.0	3.9			3.0
2002				2.8	3.8			3.0
2003				2.9	4.0			3.0
Subtot				195.5	215.5	134.5	105.9	

Expenditures and obligations reflect Program Office records as of
31 December 1994.

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pend	

Appropriation: 2035 Other Procurement, Army

1996	21	26.5	28.9	58.6	68.2			3.0
1997	33	13.9	34.1	50.9	61.0			3.0
1998				44.1	54.4			3.0
1999	46	29.8	44.1	75.8	96.4			3.0
2000	58	26.2	48.7	72.0	94.3			3.0
2001	54	21.3	43.1	71.4	96.3			3.0
2002	5	3.4	17.6	24.4	33.9			3.0
2003				12.6	18.0			3.0
2004				1.8	2.7			3.0
2005				1.4	2.1			3.0
2006				0.7	1.1			3.0
2007				0.7	1.2			3.0
2008				0.7	1.2			3.0
2009				0.7	1.2			3.0
2010				0.8	1.4			3.0
2011				0.7	1.3			3.0
2012				0.7	1.3			3.0
2013				0.6	1.2			3.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2014				0.5	1.0			3.0
2015				0.5	1.1			3.0
2016				0.3	0.7			3.0
2017				0.1	0.3			3.0
Subtot	217	121.1	216.5	420.0	540.3			
Army	217	121.1	216.5	615.5	755.8	134.5	105.9	

The 2035 appropriation funds the U.S. Army (209), Other DOD Special Users (5), and half of the JCSE requirements (3). The delta from the Army PB96 is as follows: FY96 1 JCSE quantity with TY funding of \$1.5M, FY97 1 JCSE quantity with TY funding of \$1.6M, FY99 1 JCSE quantity with TY funding of \$1.5M, and FY02 5 Other DOD Special Users quantities with TY funding of \$7.2M.

The approved U.S. Army Low Rate Initial Production quantity is 52 terminals. One each in the FY96/97 Army quantities listed above are JCSE requirements.

Appropriation: 1109 Procurement, Marine Corps

1999	24	3.6	17.2	26.7	33.9			3.0
2000	18	2.2	11.8	17.9	23.5			3.0
2001	6	0.8	3.7	5.7	7.7			3.0
2002				0.2	0.3			3.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1109 Procurement, Marine Corps (Cont'd)

2003				0.1	0.2			3.0
2004				0.1	0.1			3.0
Subtot	48	6.6	32.7	50.7	65.7			
Navy	48	6.6	32.7	50.7	65.7			

The 1109 appropriation funds the U.S. Marine Corps requirements (48).

Appropriation: 3080 Other Procurement, Air Force

1996				1.3	1.5			3.0
1997	19	2.3	14.7	20.4	24.5			3.0
1998								3.0
1999	24	3.5	16.9	26.1	33.2			3.0
2000	26	3.2	17.0	26.0	34.1			3.0
2001	7	1.3	6.1	9.5	12.8			3.0
2002				0.2	0.3			3.0
2003				0.2	0.3			3.0
2004				0.1	0.1			3.0
Subtot	76	10.3	54.7	83.8	106.8			
USAF	76	10.3	54.7	83.8	106.8			

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16c. Program Funding Summary (Cont'd):

The 3080 appropriation funds the requirements for the U.S. Air Force (73) and the remaining half of the JCSE requirement (3). The delta from the Air Force PB96 is as follows: FY97 1 JCSE quantity with TY funding of \$1.5M, and FY99 2 JCSE quantities with TY funding of \$2.8M.

Appropriation: 0300 Procurement, Defense Agencies

2000								3.0
2001								3.0
2002	4	0.7	2.6	4.2	5.8			3.0
Subtot	4	0.7	2.6	4.2	5.8			
DoD	4	0.7	2.6	4.2	5.8			
Grand Total	345	138.7	306.5	754.2	934.1	134.5	105.9	

The 0300 appropriation funds the requirements for U.S. Navy Special Forces (4).

17. Production Rate Data:

a. Deliveries (Plan/Actual) -- None.

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Based on the SMART-T Program Life Cycle Cost Estimate (PLCCE) dated January 1994, the following assumptions were determined: 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.

There is no antecedent system.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1992 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 -- None.

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AF-12 JSIPS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)

PROGRAM: JSIPS

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

Joint Service Imagery Processing System (JSIPS)

2. DoD Component: USAF

Joint Participants:

USMC, Army, and Navy

3. Responsible Office and Telephone Number:

Electronic Systems Center/ICI

Mr Richard Bleau

Hanscom AFB

Assigned: December 1, 1992

Bedford, MA 01731-5000

AV 478-1186 ext 8048

COMM 617-271-8048

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0206625M

PE 0207217F Project 3652

PE 0305154D (Shared), 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)

APPN 0300 ICN DARO000001 (DCA/DNA) (Shared)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

OATSD (PA) DFOISR 95 c. 054

JSIPS, December 31, 1994

5. Related Programs:

Mission Verification System (MVS); A unit level ATARS Imagery Ground System. Eagle Vision; Multi spectral Imagery Ground Station. Tactical Exploitation Group (TEG); Mobile forward deployed ATARS Electro-Optical/Infra-red (EO/IR) imagery receipt system.

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. The Navy elected to use a Tactical Input Segment derivative, called the Navy TIS (N-TIS), to process ATARS imagery from the F/A-18. Other existing shipboard assets (i.e. Digital Imagery Workstation-afloat) were used to satisfy the overall Navy JSIPS requirements.

7. Program Highlights:

a. Significant Historical Developments --

Office of the Secretary of Defense (OSD) instituted the Joint Service Imagery Processing System (JSIPS) program in 1986 to consolidate separate Army, Air Force, and Marine Corps imagery programs. Representatives of the three services signed a memorandum of agreement in January 1987. A Joint Service Operational Requirements Document (JSORD) was signed December 1990. JSIPS was designated as an ACAT 1C program in July 1992. JSIPS was transferred to the Program Executive Officer for C3 programs in July 1992 and became part of the Follow-On Tactical Reconnaissance System (FOTRS) in December 1992.

The Army system was deployed to Mainz-Finthen, Germany (October 1990). The system was approved for softcopy exploitation 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. 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. Final acceptance and delivery of the first Army Joint Service Imagery Processing System (JSIPS) was accomplished on 1 April 1993. In December 1993, The Army Assistant Secretary for Research, Development and Acquisition officially

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7a. Program Highlights (Cont'd):

requested Under Secretary of Defense for Acquisition and Technology (USDA&T) to support termination of the Army participation in JSIPS. A Red Team was established by the Defense Airborne Reconnaissance Office (DARO) to study the problem.

The Air Force/Marine Corp system was deployed to Eglin AFB in July of 1992 for developmental testing. A successful Advanced Tactical Airborne Reconnaissance System (ATARS) Data Link flight test was conducted in September of 1992. 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. Due to the 25 June 1993 cancellation of the Air Force Advanced Tactical Air Reconnaissance System contract, the Engineering and Manufacturing Development (EMD) strategy was changed to de-couple the National and Tactical portions of the Air Force/Marine Corps system to allow early National system acceptance. The JSIPS Low Rate Initial Production (LRIP) contract and the Navy Tactical Input Segment (TIS) modifications to the EMD contract were awarded on 23 September 1993.

b. Significant Developments Since Last Report --

The Defense Airborne Reconnaissance Office (DARO) conducted a "Red Team" review to respond to the Army's request to withdraw from the program and to evaluate the Joint Service Imagery Processing System (JSIPS) Program Office (JPO's) plan to restructure the program to improve system affordability. The DARO, in coordination with the Joint Requirement Oversight Committee (JROC), developed a plan to migrate the Service's imagery systems to a Common Imagery Ground/Surface System (CIGSS) architecture. The DARO plan was concurred by both the JROC and Defense Airborne Reconnaissance Steering Committee (DARSC) on 1 and 3 November 94. The DARO direction, which is being implemented in phases, calls for delivering systems in the pipeline, migrating current systems to a common baseline, transitioning JSIPS into the CIGSS and using streamlined acquisition procedures. As a part of this plan the JROC concurred with the Army's request to use the Modernized Imagery Exploitation System (MIES), in lieu of JSIPS. They also accepted a modified USMC Operation Concept which included a single (vice three) JSIPS as a centralized hub for exploitation and dissemination of National Imagery Intelligence Products supported by three Tactical Exploitation Group (TEGs) that provide a tactical capability.

The Air Force/Marine Corps system which was undergoing Advanced Tactical Air Reconnaissance System (ATARS) interface testing at Eglin AFB was relocated to Camp Pendleton in Feb 94 to complete system acceptance testing. The Tactical Input Segment (TIS) was returned to the contractor for final acceptance and integration with the Common

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JSIPS, December 31, 1994

7b. Program Highlights (Cont'd):

Synthetic Aperture Radar Processor (CSARP) formerly called the Marine Corps Processor. The residual assets from the TIS combined with the CSARP will be used as a testbed for CIGSS definition and implementation.

The developmental testing of the National System portion of the Marine Corps system was successfully completed in Aug 94. Defense Intelligence Agency (DIA) conducted Security Accreditation testing and granted permission for the system to conduct live operations. The DD-250 was signed and the system was turned over to the 3rd Force Imagery Intelligence Unit, 1st Marine Expeditionary Force on 9 Sep 94.

The Army system at Mains-Finthen performed increasingly well as the operators gained proficiency and residual software discrepancies were resolved. The unit met and exceeded requirements for imagery report production. This was demonstrated in both National and Theater imagery. The Army elected to defield this system in September 94 transferring imagery intelligence production responsibility to the MIES. Some system components (National Input Segment, Satellite Communications, Hardcopy Exploitation Segment, etc.) were retained by the Army. The remainder of the system components (Support Processor Group and Communications Processor Group) were returned to the JSIPS contractors facility for refurbishment and will be refielded to meet the requirements of the 12th Air Force.

Efforts are underway to modify the existing Low Rate Initial Production (LRIP) contract to accomplish upgrades to both the Army system for Air Force use and the Marine Corps system. The release of the Request for Proposal (RFP) is planned for March 1995.

A TEG was identified to satisfy tactical imagery exploitation requirements for the USMC. Three commercial off-the-shelf (COTS) based TEGs will be procured. An Acquisition Strategy was developed for the TEG to obtain an initial prototype system utilizing Navy Surface Weapons Center resources at Point Mugu, CA. A separate contract is planned for FY 96 for two additional TEGs meeting full CIGSS architecture requirements.

The JSIPS prime contractor has submitted a series of Claims/Requests for Equitable Adjustment (REAs) totaling \$62.3M at price. An Integrated Product Team (IPT) has been established to evaluate and negotiate the Claims/REAs with the Contractor. The Electronic Systems Center (ESC) Commander has been briefed on two occasions and his staff has taken an active role in assisting the IPT. The SPO is working to identify the appropriations and years of funding that will be necessary to bring a quick settlement to this issue. A request

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7b. Program Highlights (Cont'd):

for upward adjustment for expired year funds was submitted in February 1995.

The Navy TIS development has proceeded on schedule. The Critical Design Review was held in March 94. System fabrication began in April and a fully assembled system was ready for system integration and checkout in November of 1994. The System will be delivered to the Naval Surface Warfare Center (NSWC) at Dahlgren, Virginia, in March of 1995 for integration and testing with the other Navy JSIPS System components.

The Air Force LRIP program is progressing on schedule. Integration of hardware and software is on track and sub-system integration and test is scheduled to begin in the spring of 1995. The system is scheduled for activation at Shaw AFB Sumter, SC, in May 1996. Site activation preparation is under way. Informal qualification testing is scheduled to commence in August 95 with formal qualification testing in Feb 96.

In July 94 Assistant Secretary of the Air Force (Acquisition) (SAF/AQ) transferred the Designated Acquisition Commander (DAC) responsibility from Aeronautical Systems Center (ASC) to Electronic Systems Center (ESC). On 15 July 1994 ESC/ICI was designated as the Product Group Manager for Reconnaissance /Intelligence Ground Systems. This establishes a single face to the user within Air Force Materiel Command (AFMC) responsible for the development, procurement and sustainment of all Air Force Reece/Intel Ground Systems.

The program is expected to satisfy all mission requirements.

c. Changes Since As Of Date --

A request for upward adjustment for expired year funds to cover Claim/REA liabilities was submitted in February 1995.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline (APB) dated January 31, 1995. There is no Nunn-McCurdy unit cost breach.

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9. Schedule:
JSIPS

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone I Decision	N/A	JUL 86	JUL 86
Dem/Val Contract Award	N/A	JUL 86	JUL 86
Milestone II Decision	N/A	AUG 87	AUG 87
EMD Contract Award	N/A	AUG 87	AUG 87
Critical Design Review Complete	N/A	MAR 89	MAR 89
Service Final DT&E (Start)	N/A	NOV 90	NOV 90
USAF LRIP (9th AF) System Decision	APR 93	APR 93	APR 93
USAF LRIP (9th AF) Contract Award	AUG 93	SEP 93	SEP 93
Army System Production Decision	JAN 94	N/A	N/A (Ch-1)
USMC LRIP Approval	AUG 94	N/A	N/A (Ch-1)
Service Final DT&E (Finish)	N/A	AUG 94	AUG 94 (Ch-2)
Initial Operational Capability	N/A	DEC 94	DEC 94 (Ch-2)
USAF LRIP Delivery (First Delivery)	OCT 95	N/A	N/A (Ch-1)
USAF Full Rate Decision	JUL 96	N/A	N/A (Ch-1)
Navy Subsystem Production Decision	JAN 96	N/A	N/A (Ch-3)
USAF LRIP (9th AF) Delivery	N/A	N/A	APR 96 (Ch-4)

b. Previous Change Explanations --

The Army System Production originally scheduled for Jan 94 was TBD pending a decision on their formal request to withdraw from the joint program. Milestones for USMC LRIP approval and Navy LRIP approval were added to current estimates as of Jun 94 and Oct 95. USMC Full rate decision had slipped from Aug 94 to Aug 95 due to the addition of the USMC LRIP approval. USAF LRIP System delivery had slipped from Oct 95 to Apr 96 due to the USAF LRIP contract not being awarded until Sep 93. Navy Subsystem Production had slipped from Jan 96 to Sep 97 due to the addition of a Navy LRIP approval milestone.

These milestones had been added to coincide with our proposed baseline.

Due to lengthy negotiations, the LRIP contract award slipped from Aug 93 to Sep 93.

c. Current Change Explanations --

(Ch-1) These milestones have been deleted because of the restructure of the JSIPS program.

(Ch-2) The Tactical requirement for these systems was deferred thereby accelerating the National development schedule for both DT&E and IOC.

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9c. Schedule (Cont'd):

JSIPS

(Ch-3) The Navy Subsystem milestone has been moved to the Navy TIS Section and renamed Navy TIS Milestone III. The date changed from Sep 97 to Jan 98 to allow time to evaluate the initial system.

(Ch-4) USAF LRIP (9th AF) Delivery has been added to reflect the restructure of the JSIPS program.

d. References --

Development Estimate:

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAP Approved Acquisition Program Baseline dated January 31, 1995.

Navy TIS

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I Decision	N/A	JUL 86	JUL 86
Milestone II Decision	N/A	AUG 87	AUG 87
Navy TIS Study	N/A	MAR 91	MAR 91
Navy TIS EMD Decision	N/A	APR 91	APR 91
Navy TIS EMD Contract Award	N/A	SEP 93	SEP 93
Navy TIS EMD Delivery	N/A	SEP 95	SEP 95
Navy TIS LRIP Decision	N/A	FEB 96	FEB 96 (Ch-1)
Navy TIS LRIP Contract Award	N/A	MAR 96	MAR 96
Navy TIS LRIP Delivery (Initial System)	N/A	SEP 97	SEP 97
Navy TIS Milestone III	N/A	JAN 98	JAN 98
Navy TIS Production Contract Award	N/A	FEB 98	FEB 98

b. Previous Change Explanations --

There are no previous change explanations because the Navy TIS is a new end item and this is the first year it has been broken out separately.

c. Current Change Explanations --

(Ch-1) The Navy TIS LRIP decision changed from Oct 95 to Feb 96 to reflect the current date for the DARO restructure.

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9d. Schedule (Cont'd):

Navy TIS

d. References --

Development Estimate:

FY94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAP Approved Acquisition Program Baseline dated January 31, 1995.

10. Performance Characteristics:

JSIPS

a. Performance --		Approved Program		Demon-	Current
	<u>DE</u>	<u>Objective/Threshold</u>		<u>strated Perf</u>	<u>Estimate</u>
Multiple Sensor Inputs (images/24hrs)					
National	120	120	/ 120	120	120
Tactical	N/A	240	/ 240	TBD	240
Combined	N/A	360	/ 360	TBD	360
ISO Shelters	N/A	Yes	/ Yes	Yes	Yes
Reliability,	95	95	/ 95	95	95
Maintainability (% Operational availability)					
Energy Management	Yes	Yes	/ Yes	Yes	Yes
Compatible with both commercial and organic power.					
Mobility/Deployability	Yes	N/A	/ N/A	Yes	Yes
- Modular, segmentable, and transportable					

b. Previous Change Explanations --

"Imagery Receipt" has been replaced with "Multiple Sensor Inputs".

Additional performance parameters have been added to conform with our proposed baseline. The parameters identified have been listed as key parameters in the draft JORD as signed out under cover of HQ ACC/DR, 27 Jan 94.

c. Current Change Explanations -- None.

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10d. Performance Characteristics (Cont'd):

JSIPS

d. References --

Development Estimate:

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAE Approved Acquisition Program Baseline dated January 31, 1995.

Navy TIS

a. Performance --	DE	Approved Program		Demonstrated	Current
		Objective/Threshold		Perf	Estimate
Multiple Sensor Inputs (Tactical)	240	240	/ 240	TBD	240
Shipboard Operations	N/A	Yes	/ Yes	TBD	Yes
Reliability, Maintainability (& Operational availability)	95	95	/ 95	TBD	95
Energy Management Compatible with Shipboard power	Yes	Yes	/ Yes	TBD	Yes

b. Previous Change Explanations --

Navy TIS is a new end item and as such there are no previous change explanations.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAE Approved Acquisition Program Baseline dated January 31, 1995.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
JSIPS

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	311.3	278.3	273.5
Procurement	190.9	168.2	168.0
Flyaway	(166.9)		(156.2)
Peculiar Support	(11.2)		(3.5)
Initial Spares	(12.8)		(8.3)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 86 Base-Year \$	502.2	446.5	441.5
Escalation	151.0	129.8	127.1
Development (RDT&E)	(58.8)	(56.6)	(55.2)
Procurement	(92.2)	(73.2)	(71.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	653.2	576.3	568.6

Total cost and quantity have been reduced to account for the DARO restructure.

b. Quantity --			
Development (RDT&E)	3	1	1
Procurement	<u>9</u>	<u>5</u>	<u>5</u>
Total	12	6	6

The 6 JSIPS units are the following:

1 Development TEG
2 Refurbished units
2 Production TEGs
1 LRIP

NOTE: The Air Force System Acquisition Review Council (AFSARC) decision in Feb 1993 approved procurement of 1 LRIP System for JSIPS. The reason that the LRIP quantity is greater than 10 percent of the total units is that at that time there were 9 follow-on production systems planned. Subsequent to that, with downsizing, affordability issues and the DARO restructure there are no more JSIPS purchases planned.

c. Foreign Military Sales/International Cooperative Programs -- None.

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JSIPS, December 31, 1994

11d. Total Program Cost and Quantity (Cont'd):
JSIPS

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAP Approved Acquisition Program Baseline dated January 31, 1995.

Navy TIS

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	10.7	14.9	14.6
Procurement	73.4	59.3	59.6
Flyaway	(64.3)		(59.3)
Peculiar Support	(4.3)		(0.3)
Initial Spares	(4.8)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 86 Base-Year \$	84.1	74.2	74.2
Escalation	25.3	36.9	36.5
Development (RDT&E)	(9.8)	(5.2)	(5.1)
Procurement	(15.5)	(31.7)	(31.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	109.4	111.1	110.7
b. Quantity --			
Development (RDT&E)	1	1	1
Procurement	<u>14</u>	<u>26</u>	<u>26</u>
Total	15	27	27

There is no LRIP yet approved for Navy TIS.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

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11e. Total Program Cost and Quantity (Cont'd):

Navy TIS

a. References --

Development Estimate:

FY94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAE Approved Acquisition Program Baseline dated January 31, 1995.

12. Unit Cost Summary:

JSIPS

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY86\$)	441.5	446.5	
(2) Quantity	6	6	
(3) Unit Cost	73.583	74.417	-1.120
b. Procurement			
(1) Cost (BY86\$)	168.0	168.2	
(2) Quantity	5	5	
(3) Unit Cost	33.600	33.640	-0.119

Navy TIS

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY86\$)	74.2	74.2	
(2) Quantity	27	27	
(3) Unit Cost	2.748	2.748	0.000

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12. Unit Cost Summary (Cont'd):

Navy TIS

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY86\$)	59.6	59.3	
(2) Quantity	26	26	
(3) Unit Cost	2.292	2.281	0.506

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13. Cost Variance Analysis:
JSIPS

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	370.1	283.1	0.0	653.2
Previous Changes:				
Economic	+1.3	+4.4	-	+5.7
Quantity	-	-16.9	-	-16.9
Schedule	-	-	-	-
Engineering	-3.9	-	-	-3.9
Estimating	-33.4	+49.7	-	+16.3
Other	-	-	-	-
Support	-	-71.5	-	-71.5
Subtotal	-36.0	-34.3	-	-70.3
Current Changes:				
Economic	0.1	-0.2	-	-0.1
Quantity	-	-48.8	-	-48.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.5	-8.9	-	-14.4
Other	-	-	-	-
Support	-	49.0	-	+49.0
Subtotal	-5.4	-8.9	-	-14.3
Total Changes	-41.4	-43.2	-	-84.6
Current Estimate	328.7	239.9	-	568.6

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13a. Cost Variance Analysis (Cont'd):
JSIPS

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDTE&	PROC	MILCON	TOTAL
Development Estimate	311.3	190.9	0.0	502.2
Previous Changes:				
Quantity	-	-12.0	-	-12.0
Schedule	-	-	-	-
Engineering	-3.0	-	-	-3.0
Estimating	-30.1	+31.5	-	+1.4
Other	-	-	-	-
Support	-	-48.2	-	-48.2
Subtotal	-33.1	-28.7	-	-61.8
Current Changes:				
Quantity	-	-30.6	-	-30.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.7	0.4	-	-4.3
Other	-	-	-	-
Support	-	36.0	-	+36.0
Subtotal	-4.7	+5.8	-	+1.1
Total Changes	-37.8	-22.9	-	-60.7
Current Estimate	273.5	168.0	-	441.5

b. Previous Change Explanations --

RDTE&

Economic: Revised economic escalation indices.

Economic Adjustment for Negative Program Change.

Engineering: Reduction of General and National Engineering Change Proposals (ECPs) due to reduction in the President's Budget.

Estimating: Adjustment for Current & Prior Inflation.

Congressional transfer of JSIPS program funds to Defense Airborne Reconnaissance Office (DARO).

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13b. Cost Variance Analysis (Cont'd):

JSIPS

Congressional transfer of JSIPS Program funds from services to DARO.

Army reduction of program funds in preparation to withdraw from JSIPS and to cancel its second EDM unit

Cancellation of Level III drawings for LRIP contract, cancellation of CMU payback, and reduced SPO Support due to congressional reduction to FY94 funds.

Procurement

Economic: Revised economic escalation indices.

Quantity: Economic Adjustment for Negative Program Change.
Total Variance associated with decrease of 1 unit.

Estimating: - Quantity Variance resulting from decrease of one Army unit.
Reduction of Nonrecurring Flyaway costs associated with decrease of one Army unit.

Adjustment for Current & Prior Inflation.

Approved Reprogramming of FY93 Air Force funds to JSIPS to cover additional costs of LRIP contract.

Cannot fund Reliability Verification Testing, Tech Orders, training and contingent liabilities for the LRIP contract due to funding cuts in FY94.

Support: Increased Flyaway costs due to transfer of costs erroneously classified and previously counted as support costs.
Initial Spares associated with decrease of one Army unit.

Peculiar Support Equipment associated with decrease of one Army unit.

Other Wpns Systems costs associated with decrease of one Army unit.

Reduction of Peculiar Support Equipment and Other Wpns Systems costs which should have been counted as Flyaway costs.

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13b. Cost Variance Analysis (Cont'd):

JSIPS

Reduction of Peculiar Support and Other Wpns
Systems cost due to Navy reduction of funds in
FY00.

Reduced numbers of Initial Spares due to increased
use of Commercial Off the Shelf equipment and
Congressional funding reductions in the out years.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices (Economic)	N/A	+0.1
Reduction due to Air Force reprogramming for other higher priorities. (Payback to the Cheyenne Mountain Upgrade Program and reduced SPO Support. (Estimating)	-2.0	-2.3
Reduction due to Army reprogramming for other higher priorities. Modified Imagery Exploitation System (MIES) and reduced SPO Support. (Estimating)	-2.0	-2.4
Air Force realignment of funds to JSIPS due to AF termination of ATARS program. (Estimating)	+1.3	+1.5
Refinement of cost estimate based on DARO restructure of program. (Estimating)	-2.0	-2.3
 RDT&E Subtotal	 -4.7	 -5.4
(2) <u>Procurement</u>		
Revised economic escalation indices (Economic)	+0.1	-0.9
Economic adjustment for negative program change. (Economic)	N/A	+0.7
Quantity reduction of 1 USAF JSIPS (Quantity)	-30.6	-48.8
Costs associated with the refurbishment, refueling and planned block upgrades. (Estimating)	+51.1	+63.3

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13c. Cost Variance Analysis (Cont'd):
JSIPS

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduction of support costs associated with the reduction of 1 AF unit. (Support)	-5.4	-7.8
Additional estimating changes for the elimination of GFE. (Associated with the reduction of 1 USAF unit). (Estimating)	-9.3	-15.4
Re-alignment of Support costs based on restructure of program. (Support)	+41.4	+56.8
Re-alignment of Estimating Costs based upon restructure of program. (Estimating)	-41.4	-56.8
Procurement Subtotal	<u>+5.9</u>	<u>-8.9</u>

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13a. Cost Variance Analysis (Cont'd):
Navy TIS

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	20.5	88.9	0.0	109.4
Previous Changes:				
Economic	+0.1	+1.7	-	+1.8
Quantity	-	-6.6	-	-6.6
Schedule	-	-	-	-
Engineering	-0.7	-	-	-0.7
Estimating	-11.7	+19.5	-	+7.8
Other	-	-	-	-
Support	-	-28.0	-	-28.0
Subtotal	-12.3	-13.4	-	-25.7
Current Changes:				
Economic	0.2	-0.3	-	-0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	11.3	-7.7	-	+3.6
Other	-	-	-	-
Support	-	23.5	-	+23.5
Subtotal	+11.5	+15.5	-	+27.0
Total Changes	-0.8	+2.1	-	+1.3
Current Estimate	19.7	91.0	-	110.7

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13a. Cost Variance Analysis (Cont'd):

Navy TIS

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	10.7	73.4	0.0	84.1
Previous Changes:				
Quantity	-	-6.0	-	-6.0
Schedule	-	-	-	-
Engineering	-0.5	-	-	-0.5
Estimating	-3.9	+6.1	-	+2.2
Other	-	-	-	-
Support	-	-20.7	-	-20.7
Subtotal	-4.4	-20.6	-	-25.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	8.3	-5.1	-	+3.2
Other	-	-	-	-
Support	-	11.9	-	+11.9
Subtotal	+8.3	+6.8	-	+15.1
Total Changes	+3.9	-13.8	-	-9.9
Current Estimate	14.6	59.6	-	74.2

b. Previous Change Explanations --

RDT&E

Economic: There are no previous change explanations because the Navy TIS is a new end item and this is the first year it has been broken out separately.

Procurement

Economic: There are no previous change explanations because the Navy TIS is a new end item and this is the first year it has been broken out separately.

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13c. Cost Variance Analysis (Cont'd):
Navy TIS

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices (Economic)	N/A	+0.2
Allocation of Navy TIS funds separated from overall JSIPS funding line. (Estimating)	+8.3	+11.3
 RDT&E Subtotal	<u>+8.3</u>	<u>+11.5</u>
(2) <u>Procurement</u>		
Revised economic escalation indices (Economic)	N/A	-0.3
Realignment of funding profile based on restructure from DARO. (Estimating)	+6.5	+15.3
Increase in support costs based on program restructure. (Support)	+0.3	+0.5
Re-alignment of support costs relating to the restructure of the program. (Support)	+11.6	+23.0
Re-alignment of estimating costs associated with the restructure of the program. (Estimating)	-11.6	-23.0
 Procurement Subtotal	<u>+6.8</u>	<u>+15.5</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

JSIPS

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
54.433	0.933	43.484	--	-0.650	0.317	--	-3.750	40.334	94.767

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

Navy TIS

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.293	0.063	-3.485	--	-0.026	0.422	--	-0.167	-3.193	4.100

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

GROUND IMAGERY SYSTEM:

E-SYSTEMS (Garland Div), Dallas, TX

F19628-87-C-0205, FPIF/80/20/FFP

Award: August 13, 1987

Definitized: August 13, 1987

Initial Contract Price

Target	Ceiling	Qty
\$109.5	\$121.3	3

Current Contract Price

Target	Ceiling	Qty
\$185.7	\$205.5	2

Estimated Price At Completion

Contractor	Program Manager
\$242.4	\$240.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-74.5	\$-7.8
Cumulative Variances To Date (01/31/95)	\$-74.4	\$0.0
Net Change	\$0.1	\$7.8

Explanation of Change:

The program was rebaselined in April 94. Budgeted Cost of Work Scheduled (BCWS) was set equal to Budgeted Cost of Work Performed (BCWP) thereby eliminating schedule variances. The contractor has replanned remaining effort and new work packages have been issued. The Cost Performance Report (CPR) has a one-line entry for all completed work. Detail earned value is now reported only on remaining effort.

The increase in the current contract target price value is attributable to additional scope including the move of the B System from Eglin AFB, FL to Camp Pendleton, CA.

The total contract value of \$205.5M ,at ceiling, includes all contract type CLINS including FPI,FFP,CPFF and T&M. The difference between the contractor's EAC of \$242.4M and the Program Manager's EAC

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15. Contract Information (Cont'd):

of \$240.1M is the inclusion of \$2.3M of costs for the FFP effort.

b. Procurement --

LRIP:

E-Systems, Inc, Dallas, TX
F19628-93-C-0201, FPIF/80/20/FFP
Award: September 23, 1993
Definitized: September 23, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$48.9	\$50.9	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$50.3	\$52.3	1	\$50.3	\$52.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$-0.7	\$-3.0
Net Change	\$-0.7	\$-3.0

Explanation of Change:

The Program Manager is concerned that the net change in the current schedule variances could impact the overall delivery schedule which was agreed to in the contract. These variances result primarily from sub-contractor materials falling behind schedule and thus impacting the higher tier schedules. The prime contractor claims that none of these slips will affect the critical path (the Government is evaluating this point currently). The Program Manager has requested a full and detailed explanation of the specific causes of the slips and the prime contractor's assessment of the potential impacts as well as the prime's get well plan. The percent complete is 45.1% and the percent spent is 46.7% while the percent planned is 52.2%. There is sufficient management reserve to cover the net change in the cost variance at this time. However there is the potential that the schedule variance could have an impact on the target cost.

On January 18 and 19th 1995 the Government successfully completed a Baseline Review at the Contractor's facility with no outstanding issues. The Government reviewed the Contractor's internal management system and the method they use to recognize earned value.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

Total Program

- (1) Percent Program Completed: 62.5% (10 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 57.4% (\$389.6 / \$679.3)

JSIPS

- (1) Percent Program Completed: 62.5% (10 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 66.7% (\$379.3 / \$568.6)

Navy TIS

- (1) Percent Program Completed: 50.0% (5 yrs/10 yrs)
- (2) Percent Program Cost Appropriated: 9.3% (\$10.3 / \$110.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	298.4	17.7	19.7	12.6	348.4
Procurement	91.2	59.8	86.6	93.3	330.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	389.6	77.5	106.3	105.9	679.3

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16b. Program Funding Summary (Cont'd):
JSIPS

b. Appropriation Summary (Then-Year Dollars in Millions)

JSIPS

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	288.1	14.4	16.0	10.2	328.7
Procurement	91.2	45.4	68.1	35.2	239.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	379.3	59.8	84.1	45.4	568.6

b. Appropriation Summary (Then-Year Dollars in Millions)

Navy TIS

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2000)</u>	<u>Total</u>
RDT&E	10.3	3.3	3.7	2.4	19.7
Procurement	-	14.4	18.5	58.1	91.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	10.3	17.7	22.2	60.5	110.7

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16c. Program Funding Summary (Cont'd):
JSIPS

c. Annual Summary -- JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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				46.4	50.6	50.6	50.6	3.0
1989				31.8	36.3	36.3	36.3	4.2
1990				52.4	61.7	61.7	55.9	4.0
1991				25.6	31.3	31.3	24.9	4.3
1992				23.3	29.2	29.2	27.7	2.8
1993				12.3	15.8	15.8	10.9	2.7
1994				15.5	20.3	16.3	11.2	2.0
1995				10.0	13.6			2.7
1996				10.3	14.4			3.0
1997				11.1	16.0			3.0
1998				3.2	4.8			3.0
1999				1.2	1.8			3.0
2000				1.1	1.8			3.0
2001				1.1	1.8			3.0
Subtot	1			273.5	328.7	270.5	246.8	

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16c. Program Funding Summary (Cont'd):
JSIPS

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	3.9	23.5	20.7	26.7	25.8	8.0	2.8
1993		1.4		17.7	23.3	22.2	2.3	2.7
1994								2.0
1995	2	9.6	18.3	29.5	41.2	0.1		2.7
1996	2	3.2	28.2	31.6	45.4			3.0
1997		45.7		46.0	68.1			3.0
1998		13.2		13.2	20.2			3.0
1999		3.2		3.2	5.0			3.0
2000		3.0		3.1	5.0			3.0
2001		3.0		3.0	5.0			3.0
Subtot	5	86.2	70.0	168.0	239.9	48.1	10.3	

Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	6	86.2	70.0	441.5	568.6	318.6	257.1	
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16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1986				3.7	3.8	3.8	3.8	2.8
1987								2.7
1988				20.8	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	19.4	4.0
1991				2.9	3.6	3.6	3.6	4.3
1992				7.5	9.4	9.4	8.0	2.8
1993				1.7	2.2	2.2	2.2	2.7
1994				6.5	8.5	8.5	6.8	2.0
Subtot				66.1	77.0	77.0	73.9	
Army				66.1	77.0	77.0	73.9	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1988				12.5	13.6	13.6	13.6	3.0
1989				11.5	13.1	13.1	13.1	4.2
1990				7.0	8.2	8.2	8.2	4.0
1991				10.5	12.8	12.8	12.8	4.3
1992				11.0	13.8	13.8	13.8	2.8

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16c. Program Funding Summary (Cont'd):
JSIPS

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				3.9	5.0	5.0	5.0	2.7
1994				4.2	5.5	5.5	3.0	2.0
Subtot				60.6	72.0	72.0	69.5	
Navy				60.6	72.0	72.0	69.5	

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				13.1	14.3	14.3	14.3	3.0
1989				13.8	15.8	15.8	15.8	4.2
1990				28.9	34.1	34.1	28.3	4.0
1991				12.2	14.9	14.9	8.5	4.3
1992				4.8	6.0	6.0	5.9	2.8
1993				6.7	8.6	8.6	3.7	2.7
1994				4.8	6.3	2.3	1.4	2.0
Subtot	1			108.8	125.5	121.5	103.4	

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16c. Program Funding Summary (Cont'd):
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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	3.9	23.5	20.7	26.7	25.8	8.0	2.8
1993		1.4		17.7	23.3	22.2	2.3	2.7
1994								2.0
1995		7.8		9.2	12.9	0.1		2.7
Subtot	1	13.1	23.5	47.6	62.9	48.1	10.3	
USAF	2	13.1	23.5	156.4	188.4	169.6	113.7	

Appropriation: 0400 RDT&E, Defense Agencies

1995				10.0	13.6			2.7
1996				10.3	14.4			3.0
1997				11.1	16.0			3.0
1998				3.2	4.8			3.0
1999				1.2	1.8			3.0
2000				1.1	1.8			3.0
2001				1.1	1.8			3.0
Subtot				38.0	54.2			

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16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0300 Procurement, Defense Agencies

1995	2	1.8	18.3	20.3	28.3			2.7
1996	2	3.2	28.2	31.6	45.4			3.0
1997		45.7		46.0	68.1			3.0
1998		13.2		13.2	20.2			3.0
1999		3.2		3.2	5.0			3.0
2000		3.0		3.1	5.0			3.0
2001		3.0		3.0	5.0			3.0
Subtot	4	73.1	46.5	120.4	177.0			
DoD	4	73.1	46.5	158.4	231.2			
Grand Total	6	86.2	70.0	441.5	568.6	318.6	257.1	

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16c. Program Funding Summary (Cont'd):

Navy TIS

c. Annual Summary -- Navy TIS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: RDT&E - All Sources

1991				0.9	1.1	1.1		4.3
1992				1.7	2.2	2.2		2.8
1993				1.6	2.0	2.0		2.7
1994				2.2	2.9	2.9		2.0
1995				1.6	2.1			2.7
1996				2.4	3.3			3.0
1997				2.6	3.7			3.0
1998				1.6	2.4			3.0
Subtot	1			14.6	19.7	8.2		

Appropriation: Procurement - All Sources

1996	4	1.0	9.0	10.0	14.4			3.0
1997	5	1.2	11.2	12.5	18.5			3.0
1998	7	1.5	13.4	15.0	22.9			3.0
1999	6	1.2	11.2	12.5	19.7			3.0
2000	4	1.0	8.6	9.6	15.5			3.0
Subtot	26	5.9	53.4	59.6	91.0			

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16c. Program Funding Summary (Cont'd):

Navy TIS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	27	5.9	53.4	74.2	110.7	8.2		
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Appropriation: 1319 Research, Development, Test + Eval, Navy

1991				0.9	1.1	1.1		4.3
1992				1.7	2.2	2.2		2.8
1993				1.6	2.0	2.0		2.7
1994				2.2	2.9	2.9		2.0
Subtot				6.4	8.2	8.2		
Navy				6.4	8.2	8.2		

Appropriation: 0400 RDT&E, Defense Agencies

1995				1.6	2.1			2.7
1996				2.4	3.3			3.0
1997				2.6	3.7			3.0
1998				1.6	2.4			3.0
Subtot	1			8.2	11.5			

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16c. Program Funding Summary (Cont'd):
Navy TIS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0300 Procurement, Defense Agencies

1996	4	1.0	9.0	10.0	14.4			3.0
1997	5	1.2	11.2	12.5	18.5			3.0
1998	7	1.5	13.4	15.0	22.9			3.0
1999	6	1.2	11.2	12.5	19.7			3.0
2000	4	1.0	8.6	9.6	15.5			3.0
Subtot	26	5.9	53.4	59.6	91.0			
DoD	27	5.9	53.4	67.8	102.5			
Grand Total	27	5.9	53.4	74.2	110.7	8.2		

The Navy is currently reevaluating their procurement plans to align N-TIS acquisition with the restructured ATARS program aircraft deliveries.

17. Production Rate Data:

JSIPS

a. Deliveries (Plan/Actual) --

RDT&E
Procurement

To Date

1/0
5/0

b. Approved Design-to-Cost Objective -- N/A.

Navy TIS

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17a. Production Rate Data (Cont'd):

Navy TIS

a. Deliveries (Plan/Actual) --		<u>To Date</u>
	RDT&E	1/0
	Procurement	26/0

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

JSIPS

a. Assumptions and Ground Rules --

The O&S cost estimate was completed in October 1993 and updated in September 1994. Reliability and Maintainability (R&M) are primary JSIPS design parameters. To achieve our high R&M objectives, the maintenance concept is focused on modularity and inherent fault isolation capabilities through Built-in-Test (BIT) and Built-in-Test-Equipment (BITE) features. A three level maintenance concept is planned with the bulk of system maintenance being accomplished at the organization and depot levels. The operating tempo for the system is different for each service. USAF is 21 hours a day, 365 days per year and the USMC is 8 hours per day, 5 days per week. The personnel cost is a summary cost of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support the system. The consumption cost is a summary cost of fuel and energy resources: operations, maintenance and support materials consumed at the unit level; stock fund reimbursements for depot-level repairables; transportation in support of system operation and maintenance, temporary additional duty/temporary duty, and other unit-level consumption costs, such as purchased services for equipment lease and service contracts. The depot maintenance cost is a summary cost of labor, material, and overhead incurred in performing major overhauls or maintenance on the system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The Contractor support cost is a summary of contractor labor, materials, and overhead incurred in providing all or part of the logistics support required by the system. The sustaining support cost is a summary cost of replacement support equipment, modification kits, sustaining engineering, and software maintenance support. The indirect support cost is a summary of personnel support for specialty training, permanent changes of station and medical care. There is no antecedent program.

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18b. Operating and Support Costs (Cont'd):
JSIPS

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per System	Avg Annual Cost Per Antecedent
Mission Personnel	1.8	N/A
O & S Consumables	0.2	N/A
Direct Depot Maintenance	0.2	N/A
Sustaining Investment	0.7	N/A
Indirect Costs	0.4	N/A
Total	3.3	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O & M	2.9	4.1	4.2	48.0	59.2
Total	2.9	4.1	4.2	48.0	59.2

Navy TIS

a. Assumptions and Ground Rules --

The O&S cost estimate was completed in October 1993 and updated in September 1994. Reliability and Maintainability (R&M) are primary N-TIS design parameters. To achieve our high R&M objectives, the maintenance concept is focused on modularity and inherent fault isolation capabilities through Built-in-Test (BIT) and Built-in-Test-Equipment (BITE) features. A three level maintenance concept is planned with the bulk of system maintenance being accomplished at the organization and depot levels. The operating tempo for the USN is 8 hours per day for 335 days and 30 days at 24 hours per day. The personnel cost is a summary of pay and allowances

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18a. Operating and Support Costs (Cont'd):

Navy TIS

for officer, enlisted, and civilian personnel required to operate, maintain, and support the system. The consumption cost is a summary cost of fuel and energy resources: operations, maintenance and support materials consumed at the unit level; stock fund reimbursements for depot-level repairables; transportation in support of system operation and maintenance, temporary additional duty/temporary duty, and other unit-level consumption costs, such as purchased services for equipment lease and service contracts. The depot maintenance cost is a summary of labor, material, and overhead incurred in performing major overhauls or maintenance on the system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The Contractor support cost is a summary of contractor labor, materials, and overhead incurred in providing all or part of the logistics support required by the system. The sustaining support cost is a summary cost of replacement support equipment, modification kits, sustaining engineering, and software maintenance support. The indirect support cost is a summary of personnel support for specialty training, permanent changes of station and medical care. There is no antecedent program.

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per N-TIS System	Avg Annual Cost Per Antecedent
Mission Personnel	0.2	N/A
O & S Consumables	0.0	N/A
Direct Depot Maintenance	0.1	N/A
Sustaining Investment	0.1	N/A
Indirect Costs	0.1	N/A
Total	0.5	N/A

c. Contractor Support Costs -- None.

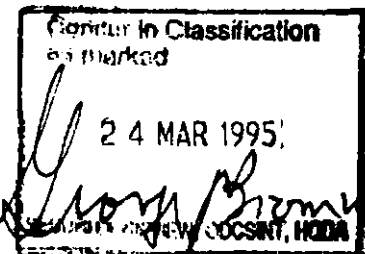
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PROGRAM: M1A2 ABRAMS UPGRADE

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- PE 23735 (Shared) For M1A2 Development
Project D330 (Shared)
PE 63639 (Shared) For M1A2 Armament
Project DC315



~~Classified by: Multiple Sources~~
~~Declassify on: Originating Agency Determination Required (OADR)~~
~~Downgrade Instructions: none, but UNCLASSIFIED when reported from classified pages~~

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 2033 ICN G82917 (Army) M1A2 LRIP
APPN 2033 ICN GA0151 (Army)
APPN 2033 ICN GA0750 (Army)
APPN 2033 ICN GA0755 (Army)
APPN 2033 ICN GB1302 (Army)
APPN 2033 ICN GC0161 (Army)
APPN 2033 ICN GE0161 (Army)

O & M:

PE 118207 (Shared) M1 Overhaul

Procurement Line Items GA0755, Abrams Upgrade Program (MCR), and GE0161, M1A2 Spares (Initial) Abrams, have been added. Procurement Line Item GB1301 was deleted because the FY94 program total has been combined with the former total in GB1302.

5. (U) Related Programs:

Tank Main Armament Systems (TMAS); Combat Vehicle Improvement Program; PM, Survivability Systems; Directorate for Horizontal Technology Integration; PM, 2nd Generation Forward Looking Infra-Red (FLIR).

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 has completed low rate production and production has started on the M1A2 Upgrade Program. Selected M1 tanks are being overhauled and replaced with M1A2 tanks in order to make them more survivable, fightable, and lethal. 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 M1A2 Abrams tank program is the successor to the M1 and M1A1 tank acquisition programs. 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

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M1A2 ABRAMS UPGRADE, December 31, 1994

7a. (U) Program Highlights (Cont'd):

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 initial production (LRIP) 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 first Acquisition Program Baseline for the Abrams Upgrade Program and authorized the Army to proceed as planned. M1A2 Live Fire Testing, New Equipment Training, the Initial Operational Test and Evaluation (IOT&E), and a substantial portion of the Production Qualification Test (PQT) were completed during 1993. As of December 31, 1993, all but one of the planned 62 LRIP M1A2 tanks had been delivered.

b. (U) Significant Developments Since Last Report --

The last of the 62 low rate initial production M1A2 tanks was delivered in March 1994. The M1A2 Milestone III Army System Acquisition Review Council (ASARC) was held on April 8, 1994. The resultant Acquisition Decision Memorandum (ADM), approving the M1A2 for full scale production and deployment, was signed by the Army Acquisition Executive (AAE) on April 20, 1994. This SAR is the transition between the Development Estimate shown in the December 31, 1993 SAR and the new Production Estimate, which reflects the ASARC decision. The M1A2 underwent its Initial Operational Test & Evaluation (IOT&E) during the period from September to December 1993. The Army Operational Test and Evaluation Command (OPTEC) and the Operational Evaluation Command's independent evaluator found the vehicle to be operationally suitable and operationally effective; however, the Director, Operational Test and Evaluation (DOT&E) evaluation of the operational testing found that the vehicle was operationally effective but not operationally suitable and there were several safety shortcomings. The Army has a program to correct deficiencies discovered in both technical and operational testing. Additional technical and user evaluations have been scheduled to verify fixes from previous operational testing. The first production M1A2 upgraded from the M1 configuration was delivered in October 1994. The M1A2 Production Qualification Test (PQT) on the low rate production vehicles was completed in December 1994. As of December 31, 1994, total M1A2 production stood at 74 units.

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M1A2 ABRAMS UPGRADE, December 31, 1994

7b. (U) Program Highlights (Cont'd):

The M1A2 tank is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --

The new Acquisition Program Baseline reflecting the Milestone III ASARC decision was approved by the Army Acquisition Executive on January 15, 1995. The FY95 Contract option for 34 tanks was exercised on February 28, 1995.

8. (U) Threshold Breaches:

There are no breaches to the AAE approved Acquisition Program Baseline, dated January 15, 1995. There are Nunn-McCurdy Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost breaches relative to the previous DAE approved Acquisition Program Baseline, dated December 18, 1992. See expanded sections 12c-m.

9. (U) Schedule:

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program: PdE</u>	Current <u>Estimate</u>
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

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M1A2 ABRAMS UPGRADE, December 31, 1994

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program: PdE</u>	Current <u>Estimate</u>
First M1A2 Production Delivery	NOV 92	NOV 92	NOV 92
Live Fire Test			
Start	JAN 93	JAN 93	JAN 93
Complete	JUL 93	JUL 93	OCT 93
Production Qualification Test			
Start	FEB 93	FEB 93	FEB 93
Complete	MAR 94	AUG 94	DEC 94 (Ch-1)
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	JUN 95	JUN 95
Depot Support Established	SEP 97	SEP 97	SEP 97

b. (U) Previous Change Explanations --

The Live Fire Test (LFT) was initially changed from July 93 to September 1993 to conform to the test plan approved in March 1993. The LFT was completed in October 1993, one month later than planned. The Production Qualification Test (PQT) completion date was initially changed from March 1994 to May 94 to conform to the M1A2 PQT Detailed Test Plan approved in February 1993. The Current Estimate for the First Unit (Company) Equipped (CONUS) was changed from April 1995 to June 1995.

c. (U) Current Change Explanations --

(Ch-1) - The Current Estimate for the PQT changed from May 1994 to December 1994. The PQT was suspended in March 1994 in order to diagnose the reasons why the tank was not meeting its gun firing accuracy requirements while engaging targets during the moving tank/moving target (m/m) test scenario. The suspended PQT was restarted on November 17, 1994 and the remaining 190 shots were completed on December 1, 1994. The firing accuracy problem was not fully resolved by a hardware fix consisting of upgraded servo valves in the turret hydraulic system. However, there are software modifications in process which should provide the desired results. The current plan is to verify these software fixes in May and April 1995 during the M1A2 Abrams Upgrade Tank Follow-On Production Test (FPT) at the Aberdeen Proving Ground. Upon successful verification, these software fixes will be incorporated in the next M1A2 software

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MLA2 ABRAMS UPGRADE, December 31, 1994

9c. (U) Schedule (Cont'd):

release, version 2.4, currently scheduled for June 1995.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated December 18, 1992.

(U) Approved Program/PdE:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program/PdE Objective/Threshold		Demon- strated 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	68.5	68.7	
Minimum Range (miles)						
Paved Roads						
With NBC	257	257	/ 243	290	243	
Without NBC	270	270	/ 256	305	256	
Maximum Speed (mph)						
Paved Roads	41.5	41.5	/ 41.5	42.5	41.5	
(0% slope)						
Cross Country	30	30	/ 30	30	30	
Acceleration (0-20 mph) (sec)						
Paved Roads(0%slope)						
With NBC	7.5	7.5	/ 9.0	7.0	7.5	
Without NBC	7.2	7.2	/ 9.0	6.9	7.2	
Combat Mission	360	360	/ 320	449	360	(Ch-1)
Reliability (MMBF)						
System Maintainability (Maintenance Ratio)	1.04	1.04	/ 1.40	0.95	1.25	
Track Life (miles)	2000	2000	/ 1000	1509	1509	(Ch-2)
Air Transportability	C5A,C17	C5A,C17	/ C5A,C17	C5A	C5A,C17	
Fightability-Improved	40	40	/ 25	25	25	
Commander's Weapon Station Visibility over M1A1 (%)						

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10a. (U) Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program;PdE Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Location Determination (% of distance traveled)	+/-2	+/-2 / +/-3	+/-0.6	+/- 3
Heading error (after 1 hr) (deg-RMS)	+/-1	+/-1 / +/-3	+/-0.88	+/- 3
Testability (BIT) (%)				
On-Board System	95	95 / 95	99	95
Level Detection Capability				
LRU Fault Isolation	95	95 / 90	96	90
Maximum False Alarm	5	5 / 10	9.6	10

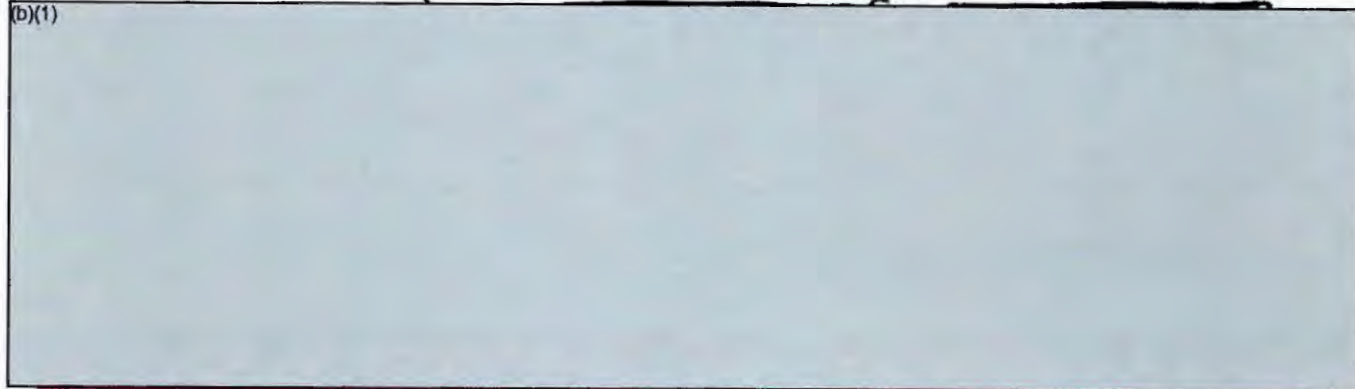
(b)(1)

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M1A2 ABRAMS UPGRADE, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program;PdE Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
	Bustle/Hull Ammo Comp)			

b. (U) Previous Change Explanations --

The Current Estimate for Combat Weight was adjusted to reflect the December 1992 production weight. Four other performance values (for Range, Speed, Combat Mission Reliability, and Maintenance Ratio) changed because of degradation due to weight. The revised estimates are the same as the M1A1 objectives which were originally established for a vehicle weighing 63.0 tons (about 8.3% less than the current weight). The Fightability Current Estimate changed to reflect the design specification required of the tank Commander's unity periscope. The Location Determination and Heading Error Current Estimates changed to account for the varying topographical and climatic conditions affecting vehicle traction in the field as opposed to ideal test conditions. Testability Performance Characteristics Current Estimates changed to conform to the contract specifications. The Targets Acquired/Unit Time Current Estimate changed to reflect the anticipated system exchange ratio enhancement over the M1A1 when using the new tank's Commander's Independent Thermal Viewer (CITV) in a "hunter-killer" system operational mode. The Current Estimates for five 1st Round Hit Probabilities changed to conform to the results achieved by the M1A1 during its Initial Production Test (IPT).

c. (U) Current Change Explanations --

(b)(1) 

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(b)(1)

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated December 18, 1992.

(U) Approved Program: PdE:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program: PdE</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	656.1	755.4	780.9
Procurement	4351.5	6028.6	5773.5
Total Rollaway	(3877.9)		(4806.5)
Other Wpns Sus	(344.7)		(705.1)
Peculiar Support	(100.5)		(101.5)
Initial Spares	(28.4)		(160.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>212.7</u>	<u>207.9</u>	<u>197.5</u>
Total FY 95 Base-Year \$	5220.3	6784.0	6751.9
Escalation	587.1	970.0	868.8
Development (RDT&E)	(-99.0)	(-84.8)	(-77.9)
Procurement	(653.7)	(1020.8)	(923.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(32.4)</u>	<u>(34.0)</u>	<u>(23.2)</u>
Total Then-Year \$	5807.4	7754.0	7620.7

The following conversion factors, from the January 1992 inflation guidance, were used to convert the Development Estimate from FY 89 Base-Year \$ to FY 95 Base-Year \$:

Development (RDT&E)	1.2281
Procurement	1.2281
Ops. and Maint. (O&M)	1.2281.

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M1A2 ABRAMS UPGRADE, December 31, 1994

11b. (U) Total Program Cost and Quantity (Cont'd):

	Development <u>Estimate</u>	Approved <u>Program: PdE</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1060</u>	<u>1060</u>	<u>1060</u>
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 --
COUNTRY QUANTITY/MODEL CASE VALUE

Saudi Arabia	315/M1A2 Abrams Tanks	\$2.9 Billion
Kuwait	218/M1A2 Abrams Tanks	\$1.9 Billion

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated December 18, 1992.

(U) Approved Program: PdE:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 92 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY95\$)	6751.9	5220.3	
(2) Quantity	1060	1060	
(3) Unit Cost	6.370	4.925	29.339

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MLA2 ABRAMS UPGRADE, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY95\$)	5773.5	4351.5	
(2) Quantity	1060	1060	
(3) Unit Cost	5.447	4.105	32.678

The Dec 92 APB did not include OMA funding. However, the Development Estimate (DE) does include OMA funding and matches the APB totals for RDT&E and Procurement. The OMA totals are included in the above "UCR Baseline" in order to have an "apples-to-apples" comparison with the "Current Estimate".

	<u>Current Estimate (DEC 94 SAR)</u>	<u>UCR Baseline (DEC 92 APB)</u>	<u>Percent Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	7620.7	5807.4	
(2) Unit Cost	7.189	5.479	31.224
d. (U) Procurement			
(1) Cost (TY\$)	6697.0	5005.2	
(2) Unit Cost	6.318	4.722	33.801

e. (U) Changes from the Baseline Report - Not Applicable

f. (U) Changes from the Previous SAR (DEC 92 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY95\$)	0.837	15.127
(2) PAUC (BY95\$)	0.798	17.165
(3) PAUC Quantity	1060	N/A
(4) PAUC (TY\$)	1.154	19.122
(5) AUPC (TY\$)	1.104	21.174

g. (U) Initial SAR

(1) Program Acquisition Cost (BY\$) --	4987.1
(2) Program Acquisition Cost (TY\$) --	5382.5

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12. (U) Unit Cost Summary (Cont'd):

h. (U) Unit Cost Changes.

(1) (U) PAUC --

The Program Acquisition Unit Cost (PAUC) (Then-Year Dollars) increased by \$1.7 million over the Development Estimate in the December 18, 1992 Acquisition Program Baseline (APB). The loss of anticipated foreign sales and funding constraints dropped the anticipated annual tank production from 240 tanks per year to an average of only about 90 tanks per year. This stretched out the program and drove up production unit costs substantially. The rest of the cost growth is mostly due to engineering changes and additional support costs.

(2) (U) AUPC --

The Average Procurement Unit Cost (Then-Year \$) increased by \$1.6 million over the Development Estimate in the December 18, 1992 Acquisition Program Baseline. See Section 12 h. (1).

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

Schedule changes due to funding constraints drove up production unit costs and accounts for 34% of the increase. The new Horizontal Technology Integration (HTI) initiatives, which significantly improve performance, account for another 49% of the increase, since these initiatives were not included in the Development Estimate. Additional funding for initial spares accounts for another 9% of the increase. The remaining 8% of the increase is due to changes in our cost estimates for material and associated support.

j. (U) Program Management and Control.

The personnel chiefly responsible for program management and cost control of the M1A2 Abrams Program are:

PEO, Armored Systems Modernization:	MG John E. Longhouser
DPEO, Armored Systems Modernization:	Mr. Jerry L. Chapin
Project Manager, Abrams Tank System:	COL Christopher V. Cardine
Product Manager, M1A2	LTC George B. Patten
Chief, Program Management Division	Mr. John D. Fleck

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M1A2 ABRAMS UPGRADE, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

k. (U) Cost Control Actions.

To preserve the tank industrial base, the Project Manager and his multiple contractors, and other supporting Government agencies, have instituted vigorous cost reduction measures to significantly reduce unit costs in order to maximize production rates within available funding. In addition, the Project Manager continues to seek approval for a four or five year multiyear contract at 120 tanks per year.

1. (U) Contract Information (In Millions of Then-Year Dollars) --

- (U) (1) Contractor(s): GENERAL DYNAMICS CORP.
- (2) Contract Title: M1A2 UPGRADE PRODUCTION
- (3) Contract Number: DAAE07-93-C-A003
- (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 (\$/%)
Baseline Report	N/A	N/A
Previous SAR	N/A	N/A
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

Since this is a Firm Fixed Price (FFP) contract, cost and schedule variances information 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.

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MLA2 ABRAMS UPGRADE, December 31, 1994

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	+0.2	-85.9	-5.3	-91.0
Quantity	-	-	-	-
Schedule	-	-47.8	-8.5	-56.3
Engineering	+44.6	+435.3	-	+479.9
Estimating	+38.7	+178.1	-0.5	+216.3
Other	-	-	-	-
Support	-	+41.5	-	+41.5
Subtotal	+83.5	+521.2	-14.3	+590.4
Current Changes:				
Economic	4.5	16.4	1.3	+22.2
Quantity	-	-	-	-
Schedule	-	101.8	-	+101.8
Engineering	-	-	-	-
Estimating	57.9	526.3	-11.4	+572.8
Other	-	-	-	-
Support	-	526.1	-	+526.1
Subtotal	+62.4	+1170.6	-10.1	+1222.9
Total Changes	+145.9	+1691.8	-24.4	+1813.3
Current Estimate	703.0	6697.0	220.7	7620.7

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M1A2 ABRAMS UPGRADE, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDTEX	PROC	O&M	TOTAL
Development Estimate	656.1	4351.5	212.7	5220.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+61.4	-	+61.4
Engineering	+37.2	+337.7	-	+374.9
Estimating	+35.3	+107.1	-4.9	+137.5
Other	-	-	-	-
Support	-	+70.3	-	+70.3
Subtotal	+72.5	+576.5	-4.9	+644.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	52.3	422.4	-10.3	+464.4
Other	-	-	-	-
Support	-	423.1	-	+423.1
Subtotal	+52.3	+845.5	-10.3	+887.5
Total Changes	+124.8	+1422.0	-15.2	+1531.6
Current Estimate	780.9	5773.5	197.5	6751.9

b. (U) Previous Change Explanations --

RDTEX

Economic: Revised Escalation Indices.

Engineering: Development of 2nd Generation Forward Looking Infra-Red (FLIR) sight.

Estimating: Revised estimates for technical testing, user testing, and microprocessor upgrade costs.
Adjustment for current & prior inflation. Addition of non-contract costs funded by PM, THAS.

Procurement

Economic: Revised escalation indices.

Schedule: Lengthened then shortened procurement schedule (102 tanks procured after FY98 moved to FYs 94-98).

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M1A2 ABRAMS UPGRADE, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

Engineering: Inserted Digital Technology to standardize communications between ground and air forces.
Began procurement of 2nd Generation FLIR sight and the new Vehicle Intercom System (VIS) with improved audio.

Estimating: Adjustment for current & prior inflation. Revised hardware price estimates.

Support: Revised estimates for special tools and test sets, initial support equipment, and technical support. Increased requirements for initial spares and training devices associated with revised fielding plan.

O & M

Economic: Revised escalation indices.

Schedule: Variances associated with schedule changes.

Estimating: Revised M1 overhaul estimates. Adjustment for current & prior inflation. Historical program adjustment.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	+4.5
Adjustment for Current & Prior Inflation. (Estimating)	-5.1	-4.3
Revised estimates for development of improved thermal sights and digital electronic improvements. (Estimating)	+57.4	+62.2
RDTE Subtotal	<u>+52.3</u>	<u>+62.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+16.4
Adjustment for Current & Prior inflation. (Estimating)	-2.7	-2.6
Lengthened procurement schedule. 173 tanks moved from FY's 1996-2001 to FY's 2002-2004. (Schedule)	--	+101.8
Revised hardware price estimates. (Estimating)	+425.1	+528.9
Adjustment for Current & Prior Inflation. (Support)	-0.3	-0.3

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M1A2 ABRAMS UPGRADE, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increased requirements for Initial Spares associated with revised demand data. (Support)	+37.6	+49.7
Increased requirements for Training Devices associated with revised training plan. (Support)	+26.0	+32.6
Revised estimates for Other Weapon System Costs (special tools & test sets, initial support equipment, and technical support). (Support)	+359.8	+444.1
Procurement Subtotal	<u>+845.5</u>	<u>+1170.6</u>

(3) O & M

Revised escalation indices. (Economic)	N/A	+1.1
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.2
Revised M1 overhaul estimates. (Estimating)	-10.3	-11.4
O & M Subtotal	<u>-10.3</u>	<u>-10.1</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC	Changes									PAUC
(Initial Est)	Econ	Qty	Sch	Eng	Est	Other	Spt	Total		(Current Est)
5.479	-0.065	--	0.043	0.453	0.744	--	0.535	1.710		7.189

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) Procurement --		Initial Contract Price		
(U) <u>M1A2 UPGRADE PRODUCTION:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL DYNAMICS CORP., WARREN, MI				
DAAE07-93-C-A003, FFP		\$378.0	\$0.0	172
Award: February 26, 1993				
Definitized: September 30, 1994				

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MLA2 ABRAMS UPGRADE, December 31, 1994

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$412.2	\$0.0	206	\$412.2	\$412.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The FY95 contract option for 34 tanks was exercised on February 28, 1995.

The following contract has been replaced by its successor, a FFP production contract, which incorporates the former Long Lead Material (LLM) contract in its entirety.

MLA2 UPGRADE LLM
GENERAL DYNAMICS CORP., WARREN, MI
DAAE07-93-C-A003, CR

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 55.0% (11 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 28.2% (\$2150.3 / \$7620.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY85-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	606.7	38.8	48.7	8.8	703.0
Procurement	1502.2	496.7	503.0	4195.1	6697.0
MILCON	-	-	-	-	-
O&M	41.4	24.9	25.7	128.7	220.7
Total	2150.3	560.4	577.4	4332.6	7620.7

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M1A2 ABRAMS UPGRADE, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1985				48.5	36.2	36.2	36.2	3.4
1986				29.5	22.7	22.7	22.7	2.8
1987				30.9	24.5	24.5	24.5	2.7
1988				90.2	74.4	74.4	74.4	3.0
1989				144.5	123.9	123.9	123.9	4.2
1990				85.1	75.8	75.8	75.8	4.1
1991				127.6	117.9	117.9	117.9	4.3
1992				76.8	72.8	72.8	69.1	3.0
1993				8.0	7.8	7.8	7.5	2.7
1994				39.2	39.0	17.7	6.7	2.0
1995				11.4	11.7	0.2	0.2	2.7
1996				36.7	38.8			3.0
1997				44.7	48.7			3.0
1998				7.8	8.8			3.0
Subtot				780.9	703.0	573.9	558.9	

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M1A2 ABRAMS UPGRADE, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

		Flyaway			Total Then-Year \$			
Fiscal		FY95 Dollars		Total				Escl
Year	Qty			Base		Obligation	Ex-	Rate
		Nonrec	Rec	Year\$	Program		pended	(\$)

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

1986		6.4		6.4	5.1	5.1	5.1	2.8
1987		0.7		0.7	0.6	0.6	0.6	2.7
1988								3.0
1989								4.2
1990		108.4		198.1	182.3	182.3	182.3	4.1
1991	62	92.6	260.4	500.5	475.3	475.3	347.5	4.3
1992				240.2	233.7	233.7	56.8	3.0
1993				162.0	161.7	159.5	32.0	2.7
1994	172	34.1	597.7	131.3	134.8	90.8	13.2	2.0
1995	34		99.6	292.0	308.7	5.6	0.1	2.7
1996	100		404.9	455.1	496.7			3.0
1997	80		348.3	447.4	503.0			3.0
1998	80		409.2	504.9	584.6			3.0
1999	97		455.1	554.5	661.3			3.0
2000	96		435.3	537.5	660.3			3.0
2001	94		433.6	526.3	665.9			3.0
2002	100		438.5	480.2	625.9			3.0
2003	100		456.6	522.3	701.1			3.0

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M1A2 ABRAMS UPGRADE, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh (Cont'd)

2004	45		225.1	214.1	296.0			3.0
Subtot	1060	242.2	4564.3	5773.5	6697.0	1152.9	637.6	

Appropriation: 2020 Operation & Maintenance, Army

1993				2.2	2.1	2.1	2.1	2.7
1994				17.3	17.2	17.2	17.2	2.0
1995				21.7	22.1	8.7	1.0	2.7
1996				23.6	24.9			3.0
1997				23.7	25.7			3.0
1998				23.7	26.5			3.0
1999				23.7	27.3			3.0
2000				23.7	28.1			3.0
2001				23.7	28.9			3.0
2002				14.2	17.9			3.0
Subtot				197.5	220.7	28.0	20.3	
Grand Total	1060	242.2	4564.3	6751.9	7620.7	1754.8	1216.8	

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M1A2 ABRAMS UPGRADE, December 31, 1994

17. (U) Production Rate Data:

- | | |
|------------------------------------|----------------|
| a. (U) Deliveries (Plan/Actual) -- | <u>To Date</u> |
| RDT&E | 10/10 |
| Procurement | 74/74 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The O&S costs shown below are derived from the Program Office Estimate (POE) for the M1A2 Upgrade program, dated January 25, 1994. A conversion quantity of 998 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 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, while tanks in the reserve units and training base are assumed to be driven 288 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.

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MLA2 ABRAMS UPGRADE, December 31, 1994

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per MLA2 in an Active Army Battalion	Avg Annual Cost Per MLA1 in an Active Army Battalion
Replen Repairables-Spares	102.1	78.9
Replen Consuma-Rep Parts	21.3	18.0
Petro, Oil & Lubricants	4.1	4.1
Training Ammunition	67.8	67.8
Depot Maintenance	29.2	18.4
Crew Pay & Allowances	126.1	126.1
Maintenance Personnel-PA	28.0	37.7
Indirect Support Personnn	100.1	105.7
Training (OPA, MPA, OMA)	108.3	105.1
War Reserve Ammo	0.0	0.0
Modification Kits	27.4	8.2
Other MPA, OMA; DBOF	6.6	2.6
Total	621.0	572.6

c. (U) Contractor Support Costs -- None.

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A-12 FAAD C2I

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(QSA)823)

PROGRAM: FAAD C2I

AS OF DATE: December 31, 1994

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AS AMENDED

CLEARED
FOR OPEN PUBLICATION

1. (U) Designation and Nomenclature (Preferred Name):

Forward Area Air Defense Command, Control and Intelligence

MAR 24 1995

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2. (U) DoD Component: Army

DIRECTORATE
AND
DEPARTMENT OF DEFENSE

3. (U) Responsible Office and Telephone Number:

Air Defense Command & Control Sys COL Daniel L. Montgomery, FAAD C2I
ATTN: SFAE-CC-AD Assigned: April 17, 1992
Redstone Ars, AL 35898-5600 AV 788-3441 COMM 205-895-3441

Air Defense Command and Control
Systems Project Office
Program Executive Office
Command and Control Systems
Redstone Arsenal, AL 35898-5600

LTC Edward Siomacco
Product Manager, FAAD C2
Assigned: 24 Jun 94
AV 788-4309
COMM (205) 895-4309

FAAD Sensors Product Office
Program Executive Office,

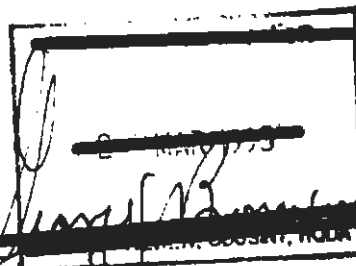
LTC James A. Wells
Product Manager, GBS

~~Classified by: [redacted]~~
~~Declassify on: OADR~~
~~Downgrade instructions~~

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FAAD C2I, December 31, 1994

3. (U) Responsible Office and Telephone Number (Cont'd):

Intelligence, Electronic Warfare
Redstone Arsenal, AL 35898-5600

Assigned: 22 Jul 93
AV 788-1673
COMM (205) 722-1673

Combat ID Project Office
Program Executive Office,
Intelligence, Electronic Warfare
Falls Church, VA 22041

COL Thomas V. Rosner
PM, Combat ID (NCTR)
Assigned: 10 Jun 92
AV 923-9573
COMM (301) 621-9573

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 63706 (Shared), 63709 (Shared)
PE 63740 Project D593
PE 64709 (Shared)
PE 64741 Project D126, D146, D2JT
PE 64817 Project D356, D494
PE 64820 Project D2IT, DE10

PROCUREMENT:

APPN 2035 ICN AD5050 (Army)
APPN 2035 ICN AD5051 (Army)
APPN 2035 ICN BA9702 (Army)
APPN 2035 ICN BS9702 (Army)
APPN 2035 ICN BS9732 (Army)
APPN 2035 ICN MA9702 (Army)
APPN 2035 ICN MA9732 (Army)
APPN 2035 ICN WK5053 (Army)

5. (U) Related Programs:

Combined Arms, AVENGER, Bradley STINGER Fighting Vehicle (BSFV), STINGER, 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), Single Channel Ground and Air Radio System (SINGGARS), Light and Special Divisions Interim Sensor (LSDIS), Global Positioning System (GPS), and Airborne Warning and Control System (AWACS).

6. (U) Mission and Description:

As the air defense node of the Army Tactical Command and Control System (ATCCS), the Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System provides critical forward area air defense information to support the command and control decision process at various levels of command. The FAAD C2I System ties

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FAAD C2I, December 31, 1994

6. (U) Mission and Description (Cont'd):

weapons together by a C2I network and integrates the Forward Area Air Defense System (FAADS) into the Army Battle Command System (ABCS) 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 command and control information. 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 (BTRY), Platoon/Section (PLT/SEC), and Fire Unit (FU) levels. The FAAD C2I System integrates weapons, sensors, communications, and command, control and intelligence (C2I) architecture to counter the entire spectrum of the air threat to the divisional forward area through the 90s. The acquisition strategy relies heavily on non-developmental items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control, and intelligence deficiencies and to keep pace with the advancing technologies.

The FAAD C2I Block I provides an early air defense command and control capability for light and special divisions. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations software and the integration of: (1) ATCCS Common Hardware/Software (CHS) processors, displays and associated peripherals; (2) Army Data Distribution System (ADDS)JTIDS; (3) combat net radios Single Channel Ground and Air Radio System (SINCGARS); (4) LSDIS; (5) Airborne Warning and Control System (AWACS); (6) FAAD weapon systems; and (7) High Frequency Radios (Voice).

The FAAD C2I Block II provides an air defense command and control capability for heavy divisions. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations software and the integration of: (1) ATCCS Common Hardware/Software (CHS) processors, displays and associated peripherals; (2) ADDS EPLRS/JTIDS; (3) combat net radios (SINCGARS); (4) Ground Based Sensor (GBS); (5) Airborne Warning and Control System (AWACS); (6) FAAD weapon systems; (7) combined arms interface; and (8) HIMAD interface.

The FAAD C2I Block III provides the objective air defense command and control capability for all active air defense units. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations software, force operations software, air battle management, system hardware/software enhancements, and the

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6. (U) Mission and Description (Cont'd):

integration of: (1) ATCCS CHS processors, displays and associated peripherals; (2) Army Data Distribution System (EPLRS/JTIDS); (3) combat net radios (SINGCARS); (4) Ground Based Sensor (GBS); (5) AWACS; (6) FAAD Weapon systems; (7) combined arms interface; (8) HIMAD interface via MSE (Voice and Data); (9) High Frequency Radios (Voice); and (10) NATO Interface. Block III will complete the digitization of the battlefield for air defense units.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Short Range Air Defense Command and Control (SHORAD C2) System was presented to the Army Systems Acquisition Review Council (ASARC) Milestone Decision Review (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 Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) System. 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 objective software.

(2) A ground based sensor (GBS) Non Development Item (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.

A March 1989 Secretary of Defense Decision Memorandum (SDDM) approved the restructure of the FAAD C2 program to field an initial capability to perform air defense engagements and essential force control interfaces within the divisions followed by development/fielding of the objective system. The May 1990 Army Acquisition Executive Acquisition Decision Memorandum approved development of a tailored FAAD C2I for early fielding to light and special divisions followed by development of the objective system to be fielded to all Army divisions. Sensors, communications equipment and identification devices will be incorporated in FAAD C2I as they become available.

Following successful completion of FAAD C2 Block I software/hardware technical, developmental and operational (Limited User Test) testing in February 1993, an In-Process Review was conducted at Fort

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7a. (U) Program Highlights (Cont'd):

Monmouth, NJ in May 1993. Authority was then granted to proceed into Low Rate Initial production (LRIP) to procure Block I software and hardware, and sufficient test articles for Block II Initial Operational Test and Evaluation (IOTE).

The FAAD C2I Block I First Unit Equipped (FUE) for light divisions, using SINGARS, JTIDS, and LSDIS, took place September 30, 1993 when the 101st Airborne (Air Assault) Division, Fort Campbell, KY, formally accepted the Block I FAAD C2I System.

The DD250 accepting the first GBS preproduction unit was signed May 27, 1993, with a ceremonial rollout at Fort Bliss, TX in June 1993. GBS Development Test Phase I was successfully completed on November 6, 1993 at White Sands Missile Range, NM.

On December 20, 1993 a Letter of Agreement from the Government of Turkey was received concerning Foreign Military Sales (FMS) of GBS for the Turkish Land Forces Command (TLFC) Air Defense Early Warning Demonstration System.

NCTR RDTE funding after FY 94 and all procurement funding was deleted from the President's budget because of affordability. Existing NCTR technology will be incorporated into FAAD C2I Block II configuration. New NCTR technologies will be incorporated as they become available.

The FAAD C2I FUE for heavy divisions, using Enhanced Position Location Reporting System (EPLRS), Joint Tactical Information Distribution System (JTIDS), Height to Medium Altitude Air Defense (HIMAD), and Ground Based Sensor (GBS), is planned for September 1995.

The following contracts have been awarded:

(1) FAAD C2 software development in September 1986; modified in July 1990 to provide the initial air defense command and control capability for light/special divisions; completed on schedule and under cost in September 1993.

(2) GBS development (NDI) in February 1992.

(3) FAAD C2 software development in December 1992 to provide air defense command and control capability to heavy divisions.

b. (U) Significant Developments Since Last Report --
(U) The FAAD C2I Block II Developmental Test (DT) and Force Development Test and Evaluation (FDT&E) were combined to reduce the overall test cost and streamline the data collection and analysis.

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7b. (U) Program Highlights (Cont'd):

The FAAD C2I Block II IOTE was successfully completed in Dec 94.

(U) The FAAD C2I Block I System was initially fielded to 5-5 ADA Battalion, 2d Infantry Division, Korea, in Sep 94. Both the Air Battle Management Operations Center and the Army Airspace Command and Control element were fielded to support urgent operational mission requirements.

(U) The FAAD C2I Block III development contract was awarded in Sep 94.

(U) The FAAD C2I System successfully participated in the National Training Center (NTC) 94-07 Rotation in Apr 94, ATCCS III Integrated Interoperability Demonstration in Jul/Aug 94, and ATCCS Horizontal Integration Demos in Sep 94.

(U) A July 1994 Acquisition Decision Memorandum (ADM) approved Long Lead Item (LLI) procurement and Special In-Progress Review (SIPR) for Low Rate Initial Production (LRIP) decision for GBS. A successful SIPR was conducted in Dec 94, with ADM to follow in Jan 95.

(U) The counter unmanned aerial vehicle (CUAV) demonstration at WSMR, NM, was completed 10 Feb 94. The GBS performed particularly well, acquiring and tracking unmanned aerial vehicle (UAV) targets at greater than 40 km. The GBS tracking data supplied to the AVENGER allowed the gunner to acquire and engage the UAVs at maximum range.

(U) All the equipment from the FAAD Sensors FMS case with the Government of Turkey was assembled into a Turkish Short-Range Air Defense System and acceptance testing was held with U.S. Government and Government of Turkey officials in the United States in Jun 94. Upon successful completion of testing, this equipment was shipped to Turkey and demonstrated to representatives of the Turkish General Staff and the Turkish Land Forces Command in Aug and Oct 94. This case was successfully completed, meeting all LOA requirements in Dec 94.

(U) On 15 Jun 94, the FAAD Sensors Product Office and Hughes Aircraft presented the first high mobility multipurpose wheeled vehicle (HMMWV) configured GBS to the Commandant, Air Defense Artillery School, Fort Bliss, TX. Testing of the configuration began with a developmental test in Sep and Oct 94 and continued with the IOTE with a follow-on reliability demonstration to verify the configuration meets the exit criteria. All production units will be in the HMMWV configuration. The configuration will provide the soldier and war fighting commander with a more rapidly deployable and maneuverable air defense system.

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FAAD C2I, December 31, 1994

7b. (U) Program Highlights (Cont'd):

(U) The FAAD C2I program is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

(U) The GBS Acquisition Decision Memorandum was signed 18 Jan 95 which approved Low Rate Initial Production (LRIP) for up to 10 systems for the HMMWV configuration. Contract award for LRIP quantity of 10 was signed 30 Jan 95.

8. (U) Threshold Breaches:

There is a schedule breach to the May 13, 1993 APB as a result of deleted NCTR funding. A Program Deviation Report was prepared and a new APB is in the approval process. There are no Nunn-McCurdy Unit Cost breaches.

9. (U) Schedule:

Block I (Light Division)

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	OCT 94(Ch-1)
C2I/Fire Unit Tech Test			
Start	SEP 90	N/A	N/A
Complete	JUN 91	N/A	N/A

b. (U) Previous Change Explanations --

Milestone II DAB accelerated from Aug 86 to Jul 86 by DA direction. FUE delayed from Jun 91 to Sep 93 due to program restructure. C2I Fire Unit Tech Test was renamed to FAAD C2 Block I Development Test (DT) and is reported as such.

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9c. (U) Schedule (Cont'd):
Block I (Light Division)

c. (U) Current Change Explanations --

(Ch-1) Depot Support Capability changed from Sep 96 to Oct 94 due to revised CHS I maintenance concept. As of Oct 94, Tobyhanna Army Depot became the depot support.

d. (U) References --

(U) Development Estimate:
SDDM, August 14, 1986

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated May 13, 1993.

Block II (Heavy Division)

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	DEC 94
Milestone III (Full Scale Production)	N/A	MAR 95	MAY 95(Ch-1)
First Unit Equipped	N/A	AUG 95	SEP 95(Ch-1)
First Production Delivery	N/A	JUN 96	SEP 96(Ch-1)
Initial Operational Capability	N/A	AUG 96	JUN 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	JUN 95
NCTR Enhancement	N/A	DEC 97	N/A
GROUND BASED SENSOR			
Milestone IIIA	JUL 86	N/A	JUL 86
LRIP Option Contract Award	JUN 88	N/A	JAN 95(Ch-2)
Candidate Evaluation Test Contract Award	AUG 88	N/A	SEP 90
Candidate Test & Proposal Evaluation Complete	MAR 89	N/A	DEC 91

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9a. (U) Schedule (Cont'd):
Block II (Heavy Division)

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Contract Award (Pre-Production)	MAY 89	N/A	FEB 92
IOT&E			
Start	NOV 91	N/A	N/A
Complete	DEC 91	N/A	N/A
Full Rate Production DAB Review	JAN 92	N/A	N/A
Full Rate Production Contract Award	FEB 92	N/A	N/A
First Unit Equipped (Pre-Prod)	JUN 93	N/A	N/A
NCTR-1			
Contract Award (FSD)	JUL 90	N/A	MAR 91
Milestone IIIA	NOV 93	N/A	N/A
Full Scale Prod Contract Award	APR 96	N/A	N/A
First Unit Equipped	SEP 96	N/A	N/A
NCTR-2			
Contract Award (FDS) (3 Competitors)	APR 90	N/A	AUG 90
Milestone IIIA	JUL 93	N/A	N/A
Full Scale Production Contract	NOV 95	N/A	N/A
First Unit Equipped	NOV 95	N/A	N/A
NCTR-4			
Contract Award (FSD)	AUG 88	N/A	N/A
Milestone IIIA	JAN 91	N/A	N/A
First Unit Equipped	MAY 93	N/A	N/A
Masked Target Sensor (MTS)			
Advanced Development			
Start	DEC 87	N/A	N/A
Complete	DEC 90	N/A	N/A

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

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9b. (U) Schedule (Cont'd):

Block II (Heavy Division)

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. Early User Evaluation (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 internal 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, requirements 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 reduction in funding. Deleted milestones were caused by replacement with equivalent 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 progress.

NCTR enhancement was changed from Dec 97 to N/A due to program affordability reasons.

Milestones changed to correspond to current program schedule and facilitate fielding as follows: FUE from Aug 95 to Jun 95; IOC from Aug 96 to Jun 96, and GBS Enhancement from Aug 95 to Jun 95.

c. (U) Current Change Explanations --

(Ch-1) Milestones changed to correspond to current program schedule and facilitate fielding as follows:

MILESTONE	FROM	TO
MS III	Mar 95	May 95
FUE	Jun 95	Sep 95
First Prod Delivery	Jun 96	Sep 96

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9c. (U) Schedule (Cont'd):

Block II (Heavy Division)

(Ch-2) LRIP Option Contract Award changed from N/A to Jan 95 due to revised schedule based on Government Accounting Office (GAO) recommendations.

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 May 13, 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	.6	.6
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/l sigma	N/A	1340-3800 (x,y)	/ 1340-3800 (x,y)	2041	1340-3800 (x,y)
Initial track rpt delivery time to fire unit (sec)	N/A	15.0	/ 15.0	15.0	15
Battle mgt info delivery speed to wpn syst (sec)	N/A	30	/ 30	30	30
Shelterized subsystem march order and emplacement 90% of time non-remoted equip (less SINGARS remote antenna and JTIDS mast antenna) (min)	30	30	/ 30	30	30

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10a. (U) Performance Characteristics (Cont'd):
Block I (Light Division)

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
MTBOMF (hrs)				
LSDIS	125	N/A / N/A	N/A	N/A
Generator	425	N/A / N/A	N/A	N/A

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).

The initial track report delivery time to fire unit (sec) was corrected to match system specifications.

MTBOMF (hours) for LSDIS and Generators is no longer being tracked.

The approved Block I System Ao is 0.6 per the 2 Feb 94 RAM Rationalia Report.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
SDDM August 14, 1986.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated May 13, 1993.

Block II (Heavy Division)

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Operational Availability (Ao) range (w/o environ control unit/veh)	.84	.88 / .8	TBD	N/A (Ch-1)

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10a. (U) Performance Characteristics (Cont'd):

Block II (Heavy Division)

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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
Wpns Control Order	w/i 90	30	/ 30	TBD	30
Sensor Mgt	N/A	30	/ 30	TBD	30
Movement Order	N/A	64	/ 64	TBD	64
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 Proced- ural Mark XII NCTR	/ AWACS Proced- ural Mark XII	TBD	AWACS PROCEDUR E, MARKXI I
Simultaneous Air Vehicle Track & Display @ ABMOC	N/A	210	/ 100	TBD	210
Report Targets in AO (%)	N/A	85	/ 85	TBD	85

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10a. (U) Performance Characteristics (Cont'd):
Block II (Heavy Division)

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
MTBOMF (hrs)					
Air Defense Sensor (Single) Ground Based Sensor	125	N/A	/ N/A	N/A	N/A
Generator	425	N/A	/ N/A	N/A	N/A
ABMOC or AME C2 subsystems	184	N/A	/ N/A	N/A	N/A
ABMOC/C2 Node		N/A	/ N/A	TBD	
90% of time will be capable of:					
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

(b)(1)

March Order (mins)	<=10	N/A	/ N/A	N/A	N/A
Emplacement (mins)	<=10	N/A	/ N/A	N/A	N/A
Reliability (MTBF hrs)	208	N/A	/ N/A	N/A	N/A
Maintainability (MTTR hrs)	2	N/A	/ N/A	N/A	N/A
NCTR					N/A
Weight (lbs)					
NCTR-1 Model 1	100	N/A	/ N/A	N/A	N/A
NCTR-1 Model 2	100	N/A	/ N/A	N/A	N/A
NCTR-2	30	N/A	/ N/A	N/A	N/A
NCTR-4	80	N/A	/ N/A	N/A	N/A

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10a. (U) Performance Characteristics (Cont'd):
Block II (Heavy Division)

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Azimuth accuracy (baseline range) (90% of IDs) (degrees)	(b)(1)			

b. (U) Previous Change Explanations --

State of alert and manual acknowledgment of ABMO from time of receipt are no longer appropriate.

NCTR removed due to deletion of NCTR funding in the President's budget.

c. (U) Current Change Explanations --

(Ch-1) The approved Ao for each FAAD C2I subsystem is defined in the 19 Aug 94 RAM Rationale Report. Number was changed from .84 to N/A because user, OEC, and AMSAA decided the subsystem numbers made more sense than the system numbers.

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 May 13, 1993.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
Summary

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	727.3	717.0	679.7
Procurement	913.3	676.7	421.6
Total Flyaway	(614.1)		(347.4)
Total Other Wpn Sys	(255.5)		(46.3)
Peculiar Support	(9.8)		(0.0)
Initial Spares	(33.9)		(27.9)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 87 Base-Year \$	1640.6	1393.7	1101.3
Escalation	223.1	438.9	307.6
Development (RDT&E)	(47.4)	(152.5)	(99.3)
Procurement	(175.7)	(286.4)	(208.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1863.7	1832.6	1408.9
b. (U) Quantity --			
Development (RDT&E)	0	2	2
Procurement	0	17	17
Total	0	19	19

Block I (Light Division)

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	292.3	378.6	377.5
Procurement	34.4	10.1	10.5
Flyaway	(18.8)		(9.2)
Other Weapons System Costs	(14.6)		(0.2)
Peculiar Support	(1.0)		(0.0)
Initial Spares	(0.0)		(1.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 87 Base-Year \$	326.7	388.7	388.0
Escalation	23.0	28.1	29.4
Development (RDT&E)	(16.6)	(25.1)	(25.8)
Procurement	(6.4)	(3.0)	(3.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	349.7	416.8	417.4

PM-SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for the

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11a. (U) Total Program Cost and Quantity (Cont'd):

FAAD C2I program, are included in both Block I and Block II current estimate.

Block I (Light Division)

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	1	1
Procurement	0	3	3
Total	0	4	4

Low Rate Initial Production Decision Memorandum; 28 May 1993 granted authority for three Block I procurement units and a training base.

FAAD C2I units are defined as air defense organizational units. FAAD C2I Block I units vary in size and cost based on specific mission requirements of the organizational unit.

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:
DAR Approved Acquisition Program Baseline dated May 13, 1993.

Block II (Heavy Division)

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	435.0	338.4	302.2
Procurement	878.9	666.6	411.1
Flyaway	(595.3)		(338.2)
Other Weapon System Costs	(240.9)		(46.1)
Peculiar Support	(8.8)		(0.0)
Initial Spares	(33.9)		(26.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 87 Base-Year \$	1313.9	1005.0	713.3

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11a. (U) Total Program Cost and Quantity (Cont'd):
Block II (Heavy Division)

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Escalation	200.1	410.8	278.2
Development (RDT&E)	(30.8)	(127.4)	(73.5)
Procurement	(169.3)	(283.4)	(204.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1514.0	1415.8	991.5

b. (U) Quantity --

Development (RDT&E)	0	1	1
Procurement	<u>0</u>	<u>14</u>	<u>14</u>
Total	0	15	15

There are no LRIP quantities involved in Block II.

FAAD C2I units are defined as organizational units. FAAD C2I Block II units equate to air defense units and vary in size and cost based on specific mission requirements of the type of units.

c. (U) Foreign Military Sales/International Cooperative Programs -- International Cooperative Program -- Project Low Level Air Picture Integration (LLAPI), an Army Chief of Staff initiated cooperative effort between the U.S. (FAAD C2I) and Germany (Army Air Defense Surveillance and Control System) to develop, test and field (FY 93 thru FY 97) an automated means of sharing the low level air picture among adjacent allied armies. Nunn funds received in FY93/94 - \$1.8M.

Foreign Military Sales/International Cooperative Programs -- The FAAD Sensors Product Office signed a Letter of Agreement (LOA), FMS case number TK-B-UXV, with the Government of Turkey on 20 Dec 93 for \$11.3M. This LOA included the GBS system, Light and Special Division Interim Sensor (LSDIS) system, data processing equipment, spares, support equipment, training, and U.S. Government and contractor technical support. This equipment was assembled into a Turkish Short-Range Air Defense System, per LOA requirements, and acceptance testing was held with U.S. Government and Government of Turkey officials in the United States in Jun 94. Upon successful completion of testing, this equipment was shipped to Turkey and demonstrated to representatives of the Turkish General Staff and Turkish Land Forces Command in Aug and Oct 94. This case was successfully completed, meeting all LOA requirements, in Dec 94.

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11d. (U) Total Program Cost and Quantity (Cont'd):
Block II (Heavy Division)

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

ADM, 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 May 13, 1993.

12. (U) Unit Cost Summary:

Block I (Light Division)

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY87\$)	388.0	388.7	
(2) Quantity	4	4	
(3) Unit Cost	97.000	97.175	-0.180
b. (U) Procurement			
(1) Cost (BY87\$)	10.5	10.1	
(2) Quantity	3	3	
(3) Unit Cost	3.500	3.367	3.960

Block II (Heavy Division)

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY87\$)	713.3	1005.0	
(2) Quantity	15	15	
(3) Unit Cost	47.553	67.000	-29.025

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12. (U) Unit Cost Summary (Cont'd):

Block II (Heavy Division)

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY87\$)	411.1	666.6	
(2) Quantity	14	14	
(3) Unit Cost	29.364	47.614	-38.329

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13. (U) Cost Variance Analysis:

Summary - All end items

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	EDT&E	PROC	MILCON	TOTAL
Estimate	774.7	1089.0	0.0	1863.7
Previous Changes:				
Economic	-16.9	+19.2	-	+2.3
Quantity	-76.0	-174.4	-	-250.4
Schedule	-1.7	+76.8	-	+75.1
Engineering	-	-7.7	-	-7.7
Estimating	+105.2	-278.7	-	-173.5
Other	-	-	-	-
Support	+22.2	-251.9	-	-229.7
Subtotal	+32.8	-616.7	-	-583.9
Current Changes:				
Economic	0.8	-5.0	-	-4.2
Quantity	-	145.2	-	+145.2
Schedule	-	17.1	-	+17.1
Engineering	-	-14.1	-	-14.1
Estimating	-29.3	6.3	-	-23.0
Other	-	-	-	-
Support	-	8.1	-	+8.1
Subtotal	-28.5	+157.6	-	+129.1
Total Changes	+4.3	-459.1	-	-454.8
Current Estimate	779.0	629.9	-	1408.9

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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	-51.8	-111.0	-	-162.8
Schedule	-4.9	+19.0	-	+14.1
Engineering	-	-3.7	-	-3.7
Estimating	+14.8	-261.8	-	-247.0
Other	-	-	-	-
Support	+14.1	-227.8	-	-213.7
Subtotal	-27.8	-585.3	-	-613.1
Current Changes:				
Quantity	-	90.9	-	+90.9
Schedule	-	8.0	-	+8.0
Engineering	-	-10.0	-	-10.0
Estimating	-19.8	1.9	-	-17.9
Other	-	-	-	-
Support	-	2.8	-	+2.8
Subtotal	-19.8	+93.6	-	+73.8
Total Changes	-47.6	-491.7	-	-539.3
Current Estimate	679.7	421.6	-	1101.3

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13a. (U) Cost Variance Analysis (Cont'd):
Block I (Light Division)

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	308.9	40.8	0.0	349.7
Previous Changes:				
Economic	-14.4	+1.9	-	-12.5
Quantity	-	-	-	-
Schedule	-1.6	-	-	-1.6
Engineering	-	-	-	-
Estimating	+110.4	-11.8	-	+98.6
Other	-	-	-	-
Support	-	-16.8	-	-16.8
Subtotal	+94.4	-26.7	-	+67.7
Current Changes:				
Economic	0.3	-	-	+0.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.3	-0.7	-	-1.0
Other	-	-	-	-
Support	-	0.7	-	+0.7
Subtotal	-	-	-	-
Total Changes	+94.4	-26.7	-	+67.7
Current Estimate	403.3	14.1	-	417.4

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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	+86.9	-9.1	-	+77.8
Other	-	-	-	-
Support	-	-14.8	-	-14.8
Subtotal	+85.4	-23.9	-	+61.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.2	-0.5	-	-0.7
Other	-	-	-	-
Support	-	0.5	-	+0.5
Subtotal	-0.2	-	-	-0.2
Total Changes	+85.2	-23.9	-	+61.3
Current Estimate	377.5	10.5	-	388.0

Correction of previous SAR from support to variance.

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 RDT&E for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, and program restructures.

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13b. (U) Cost Variance Analysis (Cont'd):
Block I (Light Division)

Procurement

Economic: Revised escalation indices.

Estimating: Previous SAR values have been prorated between Block I and Block II; includes changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, program restructures, and delayed deployments.

Support: Reduction in support requirement. Increase in spares to support fielded equipment.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	+0.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.3
RDT&E Subtotal	-0.2	--
(2) <u>Procurement</u>		
Correct previous SAR to reconcile Flyaway and Support. (Estimating)	-0.5	-0.7
(Support)	+0.5	+0.7
Procurement Subtotal	--	--

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13a. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	BDT&E	PROC	MILCON	TOTAL
Development Estimate	465.8	1048.2	0.0	1514.0
Previous Changes:				
Economic	-2.5	+17.3	-	+14.8
Quantity	-76.0	-174.4	-	-250.4
Schedule	-0.1	+76.8	-	+76.7
Engineering	-	-7.7	-	-7.7
Estimating	-5.2	-266.9	-	-272.1
Other	-	-	-	-
Support	+22.2	-235.1	-	-212.9
Subtotal	-61.6	-590.0	-	-651.6
Current Changes:				
Economic	0.5	-5.0	-	-4.5
Quantity	-	145.2	-	+145.2
Schedule	-	17.1	-	+17.1
Engineering	-	-14.1	-	-14.1
Estimating	-29.0	7.0	-	-22.0
Other	-	-	-	-
Support	-	7.4	-	+7.4
Subtotal	-28.5	+157.6	-	+129.1
Total Changes	-90.1	-432.4	-	-522.5
Current Estimate	375.7	615.8	-	991.5

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FAAD C2I, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

a. (U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	435.0	878.9	0.0	1313.9
Previous Changes:				
Quantity	-51.8	-111.0	-	-162.8
Schedule	-3.4	+19.0	-	+15.6
Engineering	-	-3.7	-	-3.7
Estimating	-72.1	-252.7	-	-324.8
Other	-	-	-	-
Support	+14.1	-213.0	-	-198.9
Subtotal	-113.2	-561.4	-	-674.6
Current Changes:				
Quantity	-	90.9	-	+90.9
Schedule	-	8.0	-	+8.0
Engineering	-	-10.0	-	-10.0
Estimating	-19.6	2.4	-	-17.2
Other	-	-	-	-
Support	-	2.3	-	+2.3
Subtotal	-19.6	+93.6	-	+74.0
Total Changes	-132.8	-467.8	-	-600.6
Current Estimate	302.2	411.1	-	713.3

b. (U) Previous Change Explanations --

RDTE

Economic: Revised escalation indices.
Adjustment for Negative Program Change.

Quantity: Deletion of need for prototypes and tooling for discontinued NCTR programs. Deletion of GBS and NCTR Funding requiring a reduction in preproduction units.

Schedule: Revised schedule.

Estimating: Previous SAR values have been prorated between Block I and Block II; includes changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, and

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FAAD C2I, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

program restructures.
Adjustment for current and prior inflation.
Support: Extended NCTR software development.

Procurement
Economic: Revised escalation indices.
Adjustment for Negative Program Change
Quantity: Decrease in fielded units; correction of 92 SAR for
GBS; cancellation of NCTR program.
Schedule: Reschedule of GBS and FAAD C2 procurement program.
Engineering: NCTR re-design due to lessons learned from Desert
Storm
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; correct
December 1992 SAR to reconcile flyaway and support;
adjustment to cost estimate based on deletion of
NCTR program; correct December 1992 support
variance to estimating.
Support: Other weapons systems cost associated with NCTR,
FAAD C2 and GBS. Correction to reconcile flyaway
and support; correct December 1992 support variance
to estimating; increase in FY94 spares to support
fielded system.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	+0.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.3
Adjustment for Current & Prior Inflation. (Estimating)	-0.3	-0.3
Refined estimate for P3I. (Estimating)	-10.2	-16.9
Reduction of NCTR funding due to cancellation of program. (Estimating)	-9.1	-11.8
RDTE Subtotal	-19.6	-28.5

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FAAD C2I, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):
Block II (Heavy Division)

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.7
Economic Adjustment for Negative Program Change. (Economic)	N/A	-0.4
Adjustment for Current & Prior Inflation. (Economic)	+0.1	+0.1
Total Variance associated with increase of 2 units.	+98.8	+157.9
Quantity Variance resulting from change in procurement of GBS from 74 to 115. (Quantity)	+82.5	+131.7
Quantity Variance resulting from change in procurement of FAAD C2 from 12 to 14 units. (Quantity)	+8.4	+13.5
Schedule Variance resulting from Quantity Allocation. (Schedule)	+8.0	+12.7
Change in annual procurement buy profile related to GBS (Schedule)	--	+4.4
GBS Configuration Change from 5 ton to HM2WV. (Engineering)	-10.0	-14.1
Refined GBS estimate based on reduced spares estimate. (Estimating)	-9.1	-10.7
FAAD C2 - Additional cable costs. (Estimating)	+2.4	+2.1
Additional nodes for objective system. (Estimating)	+9.1	+15.6
Reduced initial spares requirement associated with GBS quantity reduction. (Support)	-2.5	-1.4
Increased training estimate due to additional NET requirements previously performed by TRADOC. (Support)	+4.8	+8.8
Procurement Subtotal	<u>+93.7</u>	<u>+157.6</u>

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FAAD C2I, December 31, 1994

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Block I (Light Division)

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	104.350

Block II (Heavy Division)

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	66.100

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --

(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	N/A	6
--------	-----	---

Current Contract Price		
Target	Ceiling	Qty
\$68.5	N/A	5

Estimated Price At Completion	
Contractor	Program Manager
\$68.5	\$68.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

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FAAD C2I, December 31, 1994

15. (U) Contract Information (Cont'd):

			Initial Contract Price		
(U) FAAD C2 (I/Blk II):			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TRW Defense Systems Group, Redondo Beach, CA					
DAAH01-92-C-0373, CPIF			\$27.6	N/A	0
Award: August 14, 1992					
Definitized: December 4, 1992					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$31.4	N/A	0	\$31.4	\$31.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.2	\$-0.6
Cumulative Variances To Date	<u>\$0.6</u>	<u>\$-0.3</u>
Net Change	\$-0.6	\$0.3

Explanation of Change:

Net changes are not significant in relation to the current contract target price.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 64.0% (16 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 57.6% (\$811.0 / \$1408.9)

Block I (Light Division)

- (1) Percent Program Completed: 100.0% (16 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$417.4 / \$417.4)

Block II (Heavy Division)

- (1) Percent Program Completed: 50.0% (9 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 39.7% (\$393.6 / \$991.5)

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FAAD C2I, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):

Total Program

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	703.6	22.0	21.1	32.3	779.0
Procurement	107.4	72.5	90.0	360.0	629.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	811.0	94.5	111.1	392.3	1408.9

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Block I (Light Division)

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	403.3	-	-	-	403.3
Procurement	14.1	-	-	-	14.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	417.4	-	-	-	417.4

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FAAD C2I, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):
Block II (Heavy Division)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Block II (Heavy Division)

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RD&E	300.3	22.0	21.1	32.3	375.7
Procurement	93.3	72.5	90.0	360.0	615.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	393.6	94.5	111.1	392.3	991.5

c. (U) Annual Summary -- Block I (Light Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1980				4.0	3.0	3.0	2.9	10.6
1981				12.2	10.0	10.0	9.7	10.6
1982				15.2	13.2	13.1	12.8	7.6
1983				1.1	1.0	1.0	1.0	4.0
1984				33.4	31.2	31.2	30.7	3.8
1985				18.8	18.1	18.1	15.5	3.4
1986				20.3	20.1	20.1	19.3	2.8
1987				36.4	37.2	37.2	33.2	2.7

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FAAD C2I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Block I (Light Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1988				51.8	55.2	55.2	55.2	3.0
1989				59.9	66.3	66.3	66.3	4.2
1990				40.3	46.3	46.3	46.1	4.1
1991				46.8	55.8	55.7	54.9	4.3
1992				25.7	31.4	31.4	31.2	3.0
1993				10.8	13.5	13.5	13.5	2.7
1994				0.8	1.0	1.0	1.0	2.0
Subtot	1			377.5	403.3	403.1	393.3	

Appropriation: 2035 Other Procurement, Army

1994	2		5.9	7.0	9.3	9.3	9.3	2.0
1995	1		3.3	3.5	4.8	3.5		2.7
Subtot	3		9.2	10.5	14.1	12.8	9.3	
Grand Total	4		9.2	388.0	417.4	415.9	402.6	

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FAAD C2I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
Block II (Heavy Division)

c. (U) Annual Summary -- Block II (Heavy Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Excl 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				30.8	32.8	32.8	32.8	3.0
1989				34.8	38.5	37.7	37.6	4.2
1990				19.3	22.2	22.0	21.5	4.1
1991				6.9	8.2	8.2	8.2	4.3
1992				45.9	56.2	56.2	56.0	3.0
1993				45.3	56.9	56.9	55.3	2.7
1994				32.7	42.0	40.0	34.8	2.0
1995				29.4	39.0	6.2	1.4	2.7
1996				16.1	22.0			3.0
1997				15.0	21.1			3.0
1998				10.6	15.3			3.0
1999				1.3	2.0			3.0
2000				4.6	7.0			3.0
2001				5.1	8.0			3.0
Subtot	1			302.2	375.7	264.5	252.1	

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FAAD C2I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
Block II (Heavy Division)

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army

1990		0.4		0.4	0.5	0.5	0.5	4.1
1991								4.3
1992								3.0
1993								2.7
1994			5.9	11.9	15.7	8.0	3.5	2.0
1995	1	0.5	39.2	56.3	77.1	17.3	0.1	2.7
1996	4	2.6	41.4	51.9	72.5			3.0
1997	4	0.2	54.3	62.6	90.0			3.0
1998	3		40.5	49.8	73.8			3.0
1999	2		35.1	41.4	63.1			3.0
2000			38.9	40.9	64.3			3.0
2001			40.9	42.6	69.0			3.0
2002			34.5	39.9	66.6			3.0
2003			3.8	11.0	18.9			3.0
2004				2.4	4.3			3.0
Subtot	14	3.7	334.5	411.1	615.8	25.8	4.1	
Grand Total	15	3.7	334.5	713.3	991.5	290.3	256.2	

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FAAD C2I, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Block II (Heavy Division)

Recurring dollars in FY00-03 are for GBS procurements.

17. (U) Production Rate Data:

Block I (Light Division)

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	1/1
Procurement	2/1

b. (U) Approved Design-to-Cost Objective -- N/A.

Block II (Heavy Division)

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	1/0
Procurement	0/0

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

Block I (Light Division)

a. (U) Assumptions and Ground Rules --

Four FAAD C2I Block I units will be fielded and sustained for 20 years from date of fielding. There is no antecedent. Costs based on JAN 1995 program office estimate and Army cost position.

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FAAD C2I, December 31, 1994

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 Blk I	Avg Annual Cost Per Antecedent
Personnel Replmt Trng	0.2	N/A
Maintenance	0.1	N/A
Project Mgmt	0.1	N/A
Spares/Parts	0.2	N/A
Other Sust.	0.2	N/A
Total	0.8	N/A

c. (U) Contractor Support Costs -- None.

Block II (Heavy Division)

a. (U) Assumptions and Ground Rules --

Fifteen FAAD C2I Block II 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. Based on January 1995 baseline cost estimate and Army cost position.

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FAAD C2I, December 31, 1994

18b. (U) Operating and Support Costs (Cont'd):
Block II (Heavy Division)

b. (U) Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Blk II	Avg Annual Cost Per Antecedent
Personnel/Rplmt/Trng	0.2	N/A
Maintenance	0.2	N/A
Project Mgmt	0.1	N/A
Spares/Parts	0.3	N/A
Other Sust	0.3	N/A
Total	1.1	N/A

c. (U) Contractor Support Costs -- None.

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N-2 AIM-9X

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14-006

SELECTED ACQUISITION REPORT (RCS:DD-COMP(0&A)823)

PROGRAM: AIM-9X

AS OF DATE: December 31, 1994

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1. (U) **Designation and Nomenclature (Preferred Name):**
AIM-9X/Short Range Air-to-Air Missile

2. (U) **DoD Component:** Navy

Joint Participants:
Air Force

3. (U) **Responsible Office and Telephone Number:**

PEO(T)-PMA259
Arlington, VA 22243-1259
AV 664-2100 X5501
COMM (703) 604-2100 X5501

CAPT, Michael O'Bar
Assigned: March 1995

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAR 31 1995 11

CAPT Thomas MacKenzie relieved CAPT Michael O'Bar as the Program Manager on 31 January 1995.

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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4. (U) Program Elements/Procurement Line Items:

RDTE:

PE 0207161N (Shared) Project 0457 (Shared)
PE 0207161F (Shared) Project 4132 (Shared)
PE 0603715D (Shared) Project W0456 (Shared)

5. (U) Related Programs:

F-22, F-15, F-16 and F-18E/F

6. (U) Mission and Description:

The AIM-9 Sidewinder short-range air-to-air (SRM) is a launch and leave, air combat munition that uses passive infrared (IR) energy for acquisition and tracking and complements the Advanced Medium Range Air-to-Air Missile. Air superiority in the SRM arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. The AIM-9X is a long-term evolution to the AIM-9. Evolutionary improvements in missile seeker, fuze/warhead, and kinematics allow retrofit of components to current missiles to the maximum extent possible. Retrofitting of components will extend the operational effectiveness of existing inventories at an affordable cost while continuing evolution of the AIM-9 series.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
This is an initial SAR for the AIM-9X Program.

b. (U) Significant Developments Since Last Report --
This system 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 dated 16 December 1994 or Nunn McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IV/I	DEC 94	DEC 94	DEC 94
DEM/VAL Contract Award	DEC 94	DEC 94	DEC 94
Early Operational Assessment			
Start	FEB 95	FEB 95	MAR 95
Complete	FEB 96	FEB 96	MAY 96

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	OCT 96	OCT 96	DEC 96
EMD Contract Award	JAN 97	JAN 97	JAN 97
Preliminary Design Review	AUG 97	AUG 97	AUG 97
Critical Design Review	MAR 98	MAR 98	MAR 98
TSCEVAL			
Start	MAR 00	MAR 00	MAR 00
Complete (Report)	DEC 00	DEC 00	DEC 00
IOT&E			
Start	APR 01	APR 01	APR 01
Complete	APR 02	APR 02	APR 02
LRIP Contract Option Exercised	AUG 01	AUG 01	AUG 01
LRIP First Delivery	JUL 02	JUL 02	JUL 02

(b)(1)

Service Depot Support

JAN 05

JAN 05

JAN 05

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

USD(A&T) AIM-9X Acquisition Decision Memorandum dated December 16, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	PE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Day/Night Capability	Yes	Yes / Yes	TBD	Yes

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AIM-9X, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	Approved Program	Demon- strated	Current
PE	Objective/Threshold	Perf	Estimate
(b)(1)			
Aircraft Interface			
Missile Weight (lbs)	<.or.= 192	<.or.= 192 / <.or.= 210	TBD
Missile Size			
Length (in.)	<.or.= 115	<.or.= 115 / <.or.= 123	TBD
Box Size (in.)	<.or.= 12.5 x 12.5	<.or.= 12.5 x 12.5 / <.or.= 12.5 x 12.5	TBD
Diameter (in.)	5	5 / <.or.=7	TBD
Digital Interface	Employ from current fighter aircraft w/o digital inter- face	Employ from current fighter aircraft w/o digital inter- face	Employ from future current fighter aircraft with digital inter- face
Off Boresight Capability			
Cueing/Verification	Compat- ible with cueing systems	Compat- ible with cueing systems / Compat- ible with cueing systems	TBD

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10a. (U) Performance Characteristics (Cont'd):

	Approved Program	Demon- strated	Current
PE	Objective/Threshold	Perf	Estimate
Acquisition (deg.)	>.or.=90 >.or.=90 / >.or.=80 (or compat- ible with cueing system limits, which- ever is less)	TBD	>.or.=80 (or compat- ible with cueing system limits, which- ever is less)
Track (deg.)	>.or.=90 >.or.=90 / >.or.=80	TBD	>.or.=80
Launch (deg.)	>.or.=90 >.or.=90 / >.or.=80	TBD	>.or.=80

(b)(1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

USD(A&T) AIM-9X Acquisition Decision Memorandum dated December 16, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

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AIM-9X, December 31, 1994

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	569.0	569.0	577.1
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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	569.0	569.0	577.1
 Escalation	126.0	126.0	125.1
Development (RDT&E)	(126.0)	(126.0)	(125.1)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	695.0	695.0	702.2
 b. (U) Quantity --			
Development (RDT&E)	62	62	62
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	62	62	62

Note: Excludes 48 RDTE prototypes from the SAR Baseline and 48 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) Planning Estimate:

USD(A&T) AIM-9X Acquisition Decision Memorandum dated December 16, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

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12. (U) 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)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	695.0	0.0	0.0	695.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	7.2	-	-	+7.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7.2	-	-	+7.2
Total Changes	+7.2	-	-	+7.2
Current Estimate	702.2	-	-	702.2

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AIM-9X, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	569.0	0.0	0.0	569.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	8.1	-	-	+8.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8.1	-	-	+8.1
Total Changes	+8.1	-	-	+8.1
Current Estimate	577.1	-	-	577.1

The estimating change of \$7.2M (then-year) from Navy was added at the Defense Acquisition Board (DAB) per the Cost Analysis Improvement Group's (CAIG) recommendation. An additional \$7.0M in FY 1997 is forthcoming from the Air Force (Program Review-97).

b. (U) Previous Change Explanations -- None.

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13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Additional funds provided based on Defense Acquisition Board Approval Decision Memorandum which directed additional funds for DEM/VAL Contracts (Estimating)	+8.1	+7.2
--	------	------

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. (U) Contract Information: None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 12.5% (1 yrs/8 yrs)
- (2) Percent Program Cost Appropriated: 7.0% (\$49.3 / \$702.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RDT&E	49.3	49.8	91.4	511.7	702.2
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	49.3	49.8	91.4	511.7	702.2

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1996				26.2	29.7			3.0
1997				51.7	60.3			3.0
1998				54.6	65.6			3.0
1999				69.9	86.4			3.0
2000				50.3	64.1			3.0
2001				22.0	28.9			3.0
2002				7.8	10.5			3.0
Subtot	31			282.5	345.5			
Navy	31			282.5	345.5			

Appropriation: 3600 Research, Development, Test + Eval, AF

1996				17.8	20.1			3.0
1997				26.7	31.1			3.0
1998				56.1	67.4			3.0
1999				68.7	84.9			3.0
2000				50.3	64.1			3.0
2001				22.3	29.2			3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2002				7.8	10.6			3.0
Subtot	31			249.7	307.4			
USAF	31			249.7	307.4			

Appropriation: 0400 RDT&E, Defense Agencies

1995				44.9	49.3			2.7
Subtot				44.9	49.3			
DoD				44.9	49.3			
Grand Total	62			577.1	702.2			

17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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A-9 BRADLEY FVS UPGRADE

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: BFVS A3 Upgrade

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

Bradley Fighting Vehicle Systems (BFVS) A3 Upgrade

2. DoD Component: Army

3. Responsible Office and Telephone Number:

U.S. Army Tank-Automotive Command COL Joseph L Yakovac
PM, Bradley Fighting Vehicle Systems Assigned: August 22, 1994
ATTN: SFAE-ASM-BV AV 786-5630 COMM (313) 574-5630
Warren, MI 48397-5000

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23735 Project 371, 332 (Shared)

PROCUREMENT:

APPN 2033 ICN G80717 (Army)
APPN 2033 ICN G20900 (Army) (Shared)

5. Related Programs:

Multiple Launch Rocket System (MLRS), TOW-2 Subsystem, Command and Control Vehicle (C2V), Electronic Fighting Vehicle Systems (EFVS), Improved Bradley Acquisition System (IBAS), Horizontal Technology Integration (HTI) Second Generation Forward Looking Infrared (FLIR).

6. Mission and Description:

The upgraded Bradley Fighting Vehicle (BFV), M2A3 Infantry Fighting Vehicle (IFV) and M3A3 Cavalry Fighting Vehicle (CFV) will facilitate

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6. Mission and Description (Cont'd):

enhanced command and control, provide greater lethality, provide mobile protected transport of an infantry squad to critical points on the battlefield and perform cavalry scout and other claimant (Bradley equipped Fire Support and Stinger Teams) missions in the 21st century. Upgrades in this program include advanced technology in the areas of command and control, lethality, survivability, mobility, and sustainability required to defeat current and future threat forces while remaining operationally compatible with the main battle tank. The M2A3/M3A3 will provide overwatching fires to support the dismounted infantry, and suppress/defeat enemy tanks, reconnaissance vehicles, IFV, armored personnel carriers, bunkers, dismounted infantry, and attack helicopters.

7. Program Highlights:

a. Significant Historical Developments --

The Bradley A3 effort is part of the overall Bradley Modernization program aimed at upgrading the existing fleet by correcting deficiencies identified in the 1994-2008 Battlefield Development Plan, while accomplishing the intent of the Bradley Base Sustainment Program approved by the Secretary of Defense as part of the FY94 Amended Budget Submission. The BFVS is on the Department of the Army's Industrial Preparedness Planning List, making it essential to the Army combat needs to domestically manufacture/remanufacture these vehicles.

b. Significant Developments Since Last Report --

On January 19, 1994 the Bradley A3 Modernization program had a successful Army Systems Acquisition Review Council review which led to a February 15, 1994 Milestone IV/II Acquisition Decision Memorandum (ADM). This decision directed the A3 to enter Engineering and Manufacturing Development with a First Unit Equipped (FUE) of FY98. The Army Acquisition Executive rescinded the ADM on March 29, 1994 because the FUE of FY98 became unaffordable in the current budgetary environment. The ADM was reissued with an FUE of FY00. A Letter Contract (to be definitized as a Cost Plus Incentive Fee), was signed May 1994 with United Defense, Limited Partnership. The Improved Bradley Acquisition Subsystem contract was awarded to Texas Instruments on February 18, 1994. The A3 2nd Generation Forward Looking Infra-Red (FLIR) has been replaced by the Horizontal Technology Integration FLIR. A successful System Design Review was held December 13-15, 1994, where government approval was given to continue development leading to Preliminary Design Review in July 1995.

c. Changes Since As Of Date -- None.

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8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated March 29, 1994 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone IV	JAN 94	JAN 94	JAN 94
Development Contract Award	APR 94	MAY 94	MAY 94 (Ch-1)
Preliminary Design Review	JUN 94	MAR 95	JUL 95 (Ch-2)
Critical Design Review	OCT 94	SEP 95	DEC 95 (Ch-2)
1st Low Rate Initial Production (LRIP Award)	FEB 96	JUL 97	JUL 97 (Ch-3)
Pre-Production Qualification Test (PPQT)			
Start	AUG 95	OCT 96	OCT 96
Complete (Government)	MAY 96	JUL 97	JUL 97
2nd LRIP Award	OCT 96	MAY 98	MAY 98 (Ch-3)
PQT			
Start	NOV 97	OCT 98	OCT 98 (Ch-4)
Complete	JUN 98	JUL 99	AUG 99 (Ch-4)
1st LRIP Vehicle Deliveries	AUG 97	OCT 98	OCT 98
3rd LRIP Award	OCT 97	DEC 98	DEC 98 (Ch-3)
2nd LRIP Vehicle Deliveries	MAY 98	AUG 99	AUG 99 (Ch-3)
Initial Operation Test & Evaluation (IOT&E)			
Start	FEB 98	MAR 99	MAR 99 (Ch-4)
Complete	JUN 98	JUL 99	JUL 99
First Unit Equipped (FUE)	SEP 98	APR 00	AUG 00 (Ch-5)
Milestone III	NOV 98	NOV 99	NOV 99 (Ch-5)
3rd LRIP Vehicle Deliveries	MAY 00	APR 00	APR 00 (Ch-3)

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) Contractor proposal's late arrival changed Development contract Award from Apr 94 to May 94.

(Ch-2) Firm Program Definitization and definition of subcontract requirements changed Preliminary Design Review from Jul 94 to Jul 95 and Critical Design Review from Nov 94 to Dec 95.

(Ch-3) Production lead time adjusted to maintain a smooth production rate as follows:

1st LRIP Award from Apr 97 to Jul 97
2nd LRIP Award from Feb 98 to May 98
3rd LRIP Award from Oct 98 to Dec 98
2nd LRIP deliveries from Jul 99 to Aug 99

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9c. Schedule (Cont'd):

3rd LRIP deliveries from May 00 to Apr 00
 (Ch-4) Additional time required for adequate testing changed the following:
 PQT Start from Dec 98 to Oct 98
 IOT&E Start from Apr 99 to Mar 99
 PQT Complete from Jul 99 to Aug 99
 (Ch-5) Reduction in vehicle LRIP quantity caused by increased unit cost of the Second Generation FLIR A3 component changed FUE from Apr 00 to Aug 00 and Milestone III from Oct 99 to Nov 99.

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 29, 1994.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Command and Control:					
The command & control system must comply with the Army Standard Protocol	MIL-STD-188-220	MIL-STD-188-220	MIL-STD-188-220	TBD	MIL-STD-188-220
The command & control system must communicate fully with the command and control system employed by the armored forces	Combined Arms Command and Control	Combined Arms Command and Control	Army Brigade and below	TBD	Future (Ch-1) Battle Command Brigade and Below
Lethality:					
Improve the target acquisition and fire control system	Dual track and auto track with IBAS and CIV	Dual track and auto track with IBAS and CIV	Dual track and auto track with IBAS	TBD	Dual track and Auto track with IBAS
Survivability:					

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BFVS A3 Upgrade, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
NBC protection for dismount element while in vehicle	Ventilated face pieces	Ventilated face pieces	/ Ventilated face pieces	TBD	Ventilated Face Pieces	
Mobility:						
Ability of the BFVS to navigate in all weather conditions with GPS (accuracy plus or minus in meters)	16	16	/ 16	TBD	16	
The driver display will present navigational information	GPS information and map	GPS Information and map	/ GPS Information	TBD	GPS Information	
Maintain cross-country mobility with main battle tank	M1A2 Tank	M1A2 Tank	/ M1A2 Tank	TBD	M1A2 Tank	
RAM (Mean Miles Between Failure)	N/A	500	/ 400	TBD	400	(Ch-2)
Integrated Logistics Support:						
Systems fault isolation capability to provide unambiguous fault isolation to: Mission critical Line Replaceable Units (LRU) (% of the time)	95	95	/ 95	TBD	95	
Non-Mission critical LRUS (% of the time)	90	90	/ 90	TBD	90	

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) - Name change to be consistent with the Army Digitization Master Plan.

(Ch-2) - Reliability measure added in revised APB (Mar 29, 1994) to

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BFVS A3 Upgrade, December 31, 1994

10c. Performance Characteristics (Cont'd):

assure that current Reliability, Availability, and Maintainability (RAM) performance is maintained.

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 29, 1994.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	394.1	394.1	414.5
Procurement	2703.2	2703.2	2831.1
Non-recurring	(27.9)		(3.8)
Recurring	(2476.8)		(2573.2)
Total Rollaway	(2504.7)		(2577.0)
Training Devices	(53.1)		(54.0)
Other	(58.2)		(82.4)
Total Other Wpn Sys	(111.3)		(136.4)
Peculiar Support	(40.1)		(50.7)
Initial Spares	(47.1)		(67.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 94 Base-Year \$	3097.3	3097.3	3245.6
 Escalation	941.5	941.5	1144.6
Development (RDT&E)	(31.4)	(31.4)	(39.4)
Procurement	(910.1)	(910.1)	(1105.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	4038.8	4038.8	4390.2
 b. Quantity --			
Development (RDT&E)	2	2	0
Procurement	1600	1600	1602
Total	1602	1602	1602

Note: Excludes 8 RDTE prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

Two fully configured vehicles originally planned to be funded by RDT&E are now going to be funded by PAA.

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BPVS A3 Upgrade, December 31, 1994

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 Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 29, 1994.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY94\$)	3245.6	3097.3	
(2) Quantity	1602	1602	
(3) Unit Cost	2.026	1.933	4.788
b. Procurement			
(1) Cost (BY94\$)	2831.1	2703.2	
(2) Quantity	1602	1600	
(3) Unit Cost	1.767	1.690	4.601

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BFVS A3 Upgrade, December 31, 1994

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	425.5	3613.3	0.0	4038.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+122.9	-	+122.9
Engineering	-	-	-	-
Estimating	-75.7	-26.9	-	-102.6
Other	-	-	-	-
Support	-	+126.2	-	+126.2
Subtotal	-75.7	+222.2	-	+146.5
Current Changes:				
Economic	-0.1	8.6	-	+8.5
Quantity	-3.1	4.8	-	+1.7
Schedule	-	21.3	-	+21.3
Engineering	-	108.6	-	+108.6
Estimating	107.3	-11.7	-	+95.6
Other	-	-	-	-
Support	-	-30.8	-	-30.8
Subtotal	+104.1	+100.8	-	+204.9
Total Changes	+28.4	+323.0	-	+351.4
Current Estimate	453.9	3936.3	-	4390.2

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BFVS A3 Upgrade, December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	394.1	2703.2	0.0	3097.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-69.3	-22.6	-	-91.9
Other	-	-	-	-
Support	-	+60.2	-	+60.2
Subtotal	-69.3	+37.6	-	-31.7
Current Changes:				
Quantity	-3.0	3.0	-	-
Schedule	-	-	-	-
Engineering	-	77.5	-	+77.5
Estimating	92.7	14.4	-	+107.1
Other	-	-	-	-
Support	-	-4.6	-	-4.6
Subtotal	+89.7	+90.3	-	+180.0
Total Changes	+20.4	+127.9	-	+148.3
Current Estimate	414.5	2831.1	-	3245.6

b. Previous Change Explanations --

RDT&E

Estimating: Revised estimate due to change in methodology.

Procurement

Schedule: FUE schedule change from FY98 to FY00.

Estimating: Revised estimates based on change in methodology.

Support: Revised schedule related to support requirement.

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BFVS A3 Upgrade, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current & prior inflation. (Estimating)	+0.1	+0.1
Quantity variance resulting from transfer of 2 units to Procurement. (Quantity)	-3.0	-3.1
Increased funding to provide for R&D for the Commander's Independent Viewer (CIV). (Estimating)	+71.9	+82.9
Revised estimate to include OPTEC funding. (Estimating)	+22.0	+25.8
Reduction in In-house System Project Management requirements. (Estimating)	-1.3	-1.5
RDTE Subtotal	+89.7	+104.1
(2) <u>Procurement</u>		
Revised economic indices (Economic)	N/A	+8.8
Economic adjustment for Negative Program Change (Economic)	N/A	-0.2
Quantity variance resulting from transfer of 2 units from RDTE. (Quantity)	+3.0	+4.8
Change in annual procurement buy profile. (Schedule)	--	+21.3
Addition of Enhanced Armor Hatches (Engineering)	+47.0	+65.7
Addition of Pontoons for swim capability (Engineering)	+30.5	+42.9
Revised estimate for IBAS and FLIR requirements. (Estimating)	+294.6	+414.2
Reduction in fixed costs due to greater downsizing by contractor than anticipated. (Estimating)	-143.3	-229.4
Reassessment of prime contractor's recurring engineering support costs. (Estimating)	-136.9	-196.5
Increased Initial Spares requirements associated with revised FLIR and IBAS estimate. (Support)	+15.6	+18.4

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BFVS A3 Upgrade, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increased PSE requirements associated with revised FLIR and IBAS estimate. (Support)	+14.3	+19.1
Revised estimate for training devices and fielding. (Support)	-34.5	-68.3
Procurement Subtotal	+90.3	+100.8

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.521	0.005	--	0.090	0.068	-0.004	--	0.060	0.219	2.740

15. Contract Information (Then-Year Dollars in Millions):

a. RDTE&E --

A3 EMD:

United Defense (LP), San Jose, CA
DAAE07-94-C-0456, Letter
Award: May 19, 1994
Definitized: June 30, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$280.0	\$280.0	8

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$280.0	\$280.0	8

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$318.6	\$280.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/30/94)	\$2.8	\$-3.8
Net Change	\$2.8	\$-3.8

Explanation of Change:

No significant variances.

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15. Contract Information (Cont'd):

<u>IBAS EMD:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Texas Instruments, McKinney, TX	\$51.7	N/A	16		
DAAH01-93-C-0206, CPIF/AF					
Award: February 18, 1994					
Definitized: July 20, 1994					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$58.3	N/A	16	\$58.3	\$58.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/94)	\$1.0	\$-1.4
Net Change	\$1.0	\$-1.4

Explanation of Change:

No significant variances.

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: 3.1% (\$136.6 / \$4390.2)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2010)	<u>Total</u>
RDT&E	136.6	117.9	91.6	107.8	453.9
Procurement	-	-	124.5	3811.8	3936.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	136.6	117.9	216.1	3919.6	4390.2

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BFVS A3 Upgrade, December 31, 1994

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1994				60.1	61.5	60.6	23.5	2.0
1995				71.3	75.1	6.1	0.1	2.7
1996				108.6	117.9			3.0
1997				81.9	91.6			3.0
1998				59.4	68.4			3.0
1999				33.2	39.4			3.0
Subtot				414.5	453.9	66.7	23.6	

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

1997	29	2.7	102.5	107.8	124.5			3.0
1998	41	1.1	127.1	140.1	166.6			3.0
1999	74		154.3	175.2	214.6			3.0
2000	121		211.5	235.5	297.1			3.0
2001	152		241.7	266.4	346.2			3.0
2002	181		271.9	292.8	391.9			3.0
2003	193		276.5	295.7	407.6			3.0
2004	184		259.5	277.6	394.2			3.0

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BFVS A3 Upgrade, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY94 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)

2005	178		250.6	268.7	393.0			3.0
2006	173		242.1	260.4	392.3			3.0
2007	145		226.6	241.8	375.1			3.0
2008	131		208.9	221.8	354.5			3.0
2009				31.6	52.0			3.0
2010				15.7	26.7			3.0
Subtot	1602	3.8	2573.2	2831.1	3936.3			
Grand Total	1602	3.8	2573.2	3245.6	4390.2	66.7	23.6	

The total program for the years 2002-2010 deviates from the "To Complete" column in the FYDP. The discrepancies will be corrected at the first opportunity.

17. Production Rate Data:

a. Production Baseline Rate - None.

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BFVS A3 Upgrade, December 31, 1994

17b. Production Rate Data (Cont'd):

b. Cost and Quantity Variances (Then Year Dollars in Millions)

	Minimum Sustaining	Current Estimate	Maximum Economic	Min Sustain less CE	Maximum less CE
FY 1996					
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 1997					
Procurement Cost	0.0	124.5	0.0	-124.5	-124.5
Procurement Qty		29		N/A	N/A
Proc. Unit Cost	N/A	4.293	N/A	N/A	N/A
Balance of Proc. (FY 1998 to Complete)	4531.2	3811.8	3582.0	+719.4	-229.8

c. Deliveries (Plan/Actual) -- None.

d. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Operation and support costs reflect world wide regular Army activity and are presented as an estimate of the average annual cost per fielded M2A3 and M3A3. These costs assume an average operating tempo of 880 miles per year(per ODCSOPS Training Directorate). The source for this cost estimate is the A3 Army Cost Position (ACP), dated January 1994.

There is no antecedent.

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BFVS A3 Upgrade, December 31, 1994

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost/Veh Reg Army M2A3/M3A3	Avg Annual Cost/Veh (Antecedent)
Personnel	39.8	N/A
O&S Consumables	27.6	N/A
Direct Depot Maintenance	4.5	N/A
Other Direct Costs	7.6	N/A
Indirect Costs	3.0	N/A
Total	82.5	N/A

c. Contractor Support Costs -- None.

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N-13 FDS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(OEA)823)

PROGRAM: FIXED DIST SYS (FDS)

AS OF DATE: December 31, 1994

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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

SPACE/NAVAL WARFARE SYSTEMS COMMAND

2451 CRYSTAL DRIVE

ARLINGTON, VA 22245-5200

Mr. R. L. Hobart

Assigned: October

AV 332-0041 COMM (703) 602-2452

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0204311N (Shared) Project X0766

PE 0603784N Project X1312

PE 0604784N Project X1312

MILCON:

PE 0204311N (Shared)

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAR 28 1995 2

INSPECTORATE FOR PROTECTION OF INFORMATION
AND SECURITY REVIEW (ASDPN)
DEPARTMENT OF DEFENSE

No Security Objection to Open Publication
(AS AMENDED)

95-C-0319
MAR 8 1995

Office of the Chief of
Naval Operations Dept. of the Navy

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~~Declassify on: [REDACTED]~~
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FIXED DIST SYS (FDS), December 31, 1994

5. (U) Related Programs:
Surveillance Direction System (SDS).

6. Mission and Description:

(b)(1)



(U) As a result of the changing world situation, the FDS program has been restructured to respond to this new world order. The Secretary of Defense (SECDEF) guidance on the development and production has impacted the acquisition strategy of the FDS program. With the deletion of all production systems in 1992, the FDS program was restructured to provide for the development of and preparation for the production of deployable systems to respond to rapidly changing world events.

(b)(1)



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FIXED DIST SYS (FDS), December 31, 1994

6. ~~(S)~~ Mission and Description (Cont'd):

(b)(1)

7. (U) Program Highlights:

(b)(1)

(U) These changes are not expected to have a significant impact on the development program technical characteristics, cost or schedule.

(U) Underwater Segment. -- A follow-on FDS underwater hardware development contract was awarded to AT&T Technologies on a Cost Plus Award Fee (CPAF) basis on 23 February 1989. An Underwater Segment (UWS) Engineering and Manufacturing Development (E&MD) contract was awarded to AT&T Technologies on a Cost Plus Incentive Fee (CPIF) basis on 15 January 1990. The underwater segment successfully completed a Preliminary Design Review (PDR) in January 1989.

(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

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FIXED DIST SYS (FDS), December 31, 1994

7a. ~~(S)~~ Program Highlights (Cont'd):

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 Acquisition 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.

(U) The manufacturing of all Shore Terminus Equipment for the Underwater Segment completed in June 1993.

(U) By the end of 1993 AT&T had reached full production rate for repeater electronics. A total of 41 repeaters had been delivered for integration. In addition, the first 10 (of 16) FDS-D Clusters had been delivered for integration and FDS-D integration was 83% complete. An additional 167 nautical miles of trunk cable and 5 repeaters for the FDS EDM had been installed. This means that 7% of the system's cable had been installed as well as 14% of the repeaters.

(U) By the end of 1993 the Shore Signal and Information Processing Segment (SSIPS) Build 2 (of 5 builds) software had completed unit and integration testing. The Shore Processing System for FDS-D, a subset of SSIPS, had completed software coding and hardware assembly and was in the final stages of system integration and testing.

(b)(1)



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FIXED DIST SYS (FDS), December 31, 1994

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --

(U) Underwater Segment. -- Significant progress was made on the Underwater Segment as follows:

(U) Fiber-Optic Cable production proceeded smoothly with a total of over 4773 nautical miles of armored and Deep Water Trunk (DWT) cable delivered to date for FDS-1 and other applications. Simplex Wire & Cable has delivered over 78% (872 nautical miles) of their armored trunk cable contract requirements and 54% (2581 nautical miles) of their Deep Water Trunk (DWT) cable contract requirements. In parallel, STC has delivered 35% (1320 nautical miles) of their DWT cable contract requirements. All of the cable for the North field and trunk as well as over 400 nautical miles required for the South field has been delivered.

(U) AT&T solved all problems associated with the transition of the underwater hardware from design to manufacturing. Full rate manufacturing has been achieved on repeaters and clusters. To date for FDS-1 62 of 109 repeaters, 59 of 146 clusters, and 1369 of 2368 hydrophones have been delivered. Including other applications, a total of 78 clusters and 81 repeaters have been delivered to date and a total of 1817 hydrophones have been fabricated (some not yet integrated into clusters and delivered).

(U) The first of two portions of FDS-1 North Field was integrated and installed at sea. The North Trunk (consisting of both Armored and DWT cable and associated repeaters) was integrated and will be installed in the second quarter of FY95. The remainder of the FDS-1 North Field is scheduled for deployment during the third and fourth quarters of FY95. 91% of the remaining North Field cable and electronics have been integrated to date.

(U) Shore Segment: -- Build 4 (of 5 Builds) of the Shore Signal and Information Processing Segment (SSIPS) software was coded and tested at the unit level. It is presently undergoing integration testing and will complete Factory Acceptance testing in the third quarter of FY95.

(U) This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --

The SAE approved a new APB on February 6, 1995 which moved the TECHEVAL threshold to third quarter FY96.

8. (U) Threshold Breaches:

(U) There are currently no Acquisition Program Baseline (APB) (dated February 6, 1995) breaches. There are no Nunn-McCurdy unit cost

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FIXED DIST SYS (FDS), December 31, 1994

8. (U) Threshold Breaches (Cont'd):

breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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

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DT IIE (Techeval)	N/A	DEC 95	APR 96 (Ch-1)
OT IIE (Opeval)	N/A	N/A	N/A (Ch-2)
Milestone IIIB	JUN 96	N/A	N/A (Ch-2)
Milestone IV/VA	JUN 98	N/A	N/A
Milestone VB	MAR 04	N/A	N/A

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 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.

The change in the Deploy Field One milestone was required due to delayed manufacturing of UWS components and Deep Water Trunk (DWT) cable.

The following changes in current estimates resulted from slower than

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FIXED DIST SYS (FDS), December 31, 1994

9b. (U) Schedule (Cont'd):

planned ramp-up of manufacturing of UWS components and DWT cable.

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DT IIE (TECHEVAL)	from	JUN 95 to NOV 95
OT IIE (OPEVAL)	from	DEC 95 to MAY 96
MILESTONE IIIB	from	JUN 96 to DEC 96

The following changes in current estimates resulted from the loss of O&MN funding to operate the ships that would have deployed FDS trunk and field hardware during FY95:

(b)(1)

DT IIE (TECHEVAL)	from	NOV 95 to JAN 97
OT IIE (OPEVAL)	from	MAY 96 to JUN 97
Milestone IIIB	from	DEC 96 to SEP 97

c. (U) Current Change Explanations --

(b)(1)

DT IIE (TECHEVAL)	from	JAN 97 to APR 96
-------------------	------	------------------

However, funding constraints in FY95 required the planning for TECHEVAL to be delayed until 1st quarter FY96, delaying TECHEVAL 4 months to April 1996.

{CH-2} In January 1992, the Secretary of Defense announced that FDS would go "on the shelf" rather than into Production after Milestone III. Subsequently, all funds other than RDT&E were cut from the budget. The cancellation of FDS Production and the remote possibility of a future Production decision, clearly obviate the need for tests and reviews that exist only to facilitate Production decisions. Accordingly, in the spirit of Acquisition Reform and fiscal responsibility and with the concurrence of the Director of Navy Test & Evaluation & Technology Requirements, ASN (RDA) canceled OPEVAL and the Milestone III review for FDS. However, limited OT will be conducted at the conclusion of TECHEVAL.

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FIXED DIST SYS (FDS), December 31, 1994

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Development Estimate:

DCP dated May 15, 1989, Subj: "Fixed Distributed System (FDS)"

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated February 06, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

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FIXED DIST SYS (FDS), December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

Note: Demonstrated performances were results of tests conducted prior to Milestone II.

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:

NAE Approved Acquisition Program Baseline dated February 06, 1995.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1300.0	1286.6	1079.1
Procurement	3814.8	0.0	0.0
Underwater Segment	(2312.2)		(0.0)
Shore Segment	(974.6)		(0.0)
System Integration	(104.5)		(0.0)
Total Flyaway	(3391.3)		(0.0)
Other Weapons Systems Cost	(227.7)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(195.8)		(0.0)
Construction (MILCON)	75.7	39.9	16.6
Ops. and Maint. (O&M)	<u>0.0</u>	<u>N/A</u>	<u>0.0</u>
Total FY 88 Base-Year \$	5190.5	1326.5	1095.7

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FIXED DIST SYS (FDS), December 31, 1994

11a. (U) Total Program Cost and Quantity (Cont'd):

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	2656.8	331.8	167.8
Development (RDT&E)	(304.1)	(321.5)	(165.5)
Procurement	(2320.3)	(0.0)	(0.0)
Construction (MILCON)	(32.4)	(10.3)	(2.3)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(N/A)</u>	<u>(0.0)</u>
Total Then-Year \$	7847.3	1658.3	1263.5

b. (U) Quantity --

Development (RDT&E)	1	1	1
Procurement	<u>11</u>	<u>0</u>	<u>0</u>
Total	12	1	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:

NAE Approved Acquisition Program Baseline dated February 06, 1995.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (FEB 95 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	1095.7	1326.5	
(2) Quantity	1	1	
(3) Unit Cost	1095.70	1326.50	-17.40

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FIXED DIST SYS (FDS), December 31, 1994

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY88\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

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FIXED DIST SYS (FDS), December 31, 1994

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	-10.7	-24.3	+0.1	-34.9
Quantity	-	-4827.1	-	-4827.1
Schedule	+34.0	-127.0	-	-93.0
Engineering	-	-	-	-
Estimating	-339.9	-538.3	-89.3	-967.5
Other	-	-	-	-
Support	-	-618.4	-	-618.4
Subtotal	-316.6	-6135.1	-89.2	-6540.9
Current Changes:				
Economic	(-1.4)	-	-	-1.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	(-41.5)	-	-	-41.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-42.9	-	-	-42.9
Total Changes	-359.5	-6135.1	-89.2	-6583.8
Current Estimate	1244.6	-	18.9	1263.5

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FIXED DIST SYS (FDS), December 31, 1994

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	+25.5	-	-	+25.5
Engineering	-	-	-	-
Estimating	-216.3	-344.0	-59.1	-619.4
Other	-	-	-	-
Support	-	-423.5	-	-423.5
Subtotal	-190.8	-3814.8	-59.1	-4064.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	(-30.1)	-	-	-30.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-30.1	-	-	-30.1
Total Changes	-220.9	-3814.8	-59.1	-4094.8
Current Estimate	1079.1	-	16.6	1095.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation rates. Adjustment for negative program change.

Schedule: Cost growth due to loss of Deployment Platforms in FY95.

Estimating: Cost growth due to UWS E&MD contract efforts. Adjustment for current and prior inflation. Re-evaluation of post-MILESTONE III Program requirements.

Procurement

Economic: Revised economic escalation rates.

Quantity: Revised due to SECDEF Guidance eliminating

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FIXED DIST SYS (FDS), December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

production received 29 Jan 92, now reflected in President's Budget.

Schedule: Between Milestone II and the program review in Nov 91, the FDS production program was downsized from 11 to 4 systems and the schedule was extended.

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 production systems.

MILCON

Economic: Revised economic escalation rates. Adjustment for negative program change.

Estimating: Revision in size of facilities and elimination of post MILESTONE III MILCON requirements.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised escalation indices. (Economic)	N/A	-2.2
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.8
Adjustment for Current & Prior Inflation. (Estimating)	+1.2	+1.5
Revised estimate due to reduced funding (Estimating)	-31.3	-43.0
RD&E Subtotal	-30.1	-42.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
654	-36	2366	-93	--	-1009	--	-618	610	1264

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FIXED DIST SYS (FDS), December 31, 1994

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDTE --

(U) FDS UWS FSED:

AT&T, Advanced Tech Sys, Greensboro, NC
 N00039-90-C-0077, CPIF
 Award: January 15, 1990
 Definitized: January 15, 1990

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$504.7	N/A	1	\$536.8	\$541.1

Initial Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$320.5	N/A	1

Cost Variance Schedule Variance

Previous Cumulative Variances \$-85.9 \$-19.4

Cumulative Variances To Date (12/31/94) \$-99.3 \$-12.3

Net Change \$-13.4 \$7.1

Explanation of Change:

Even though the Cost Variance has increased since the last report, the CV percentage has been stable at from -29% to -31% over the past 15 months. This CV stability, coupled with the improving SV, continues to indicate that AT&T has turned the corner on the transition from design to manufacturing. The \$13.4M additional CV was caused by work required to correct previously reported technical problems. With cluster manufacturing steady state finally being reached over the past 3 months (an average of over 10 clusters per month completed) further significant cost growth is not anticipated.

The Schedule Variance percentage has stabilized and improved over the last thirteen months due to transition to steady state manufacturing (7.8%, -7.4%, -7.1%, -7.5%, -7.1%, -6.9%, -6.4%, -5.6%, -6.2%, -6.3%, -6.1%, -5.1%, and -3.7% respectively). This improving trend is expected to continue to contract completion.

(U) SSIPS:

IBM Corporation, Manassas, VA
 N00039-91-C-0031, CPIF
 Award: February 21, 1992
 Definitized: February 21, 1992

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$120.0	N/A	0	\$133.6	\$141.6

Initial Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$50.5	N/A	0

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15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-5.5	\$-1.3
Cumulative Variances To Date (12/31/94)	<u>\$-7.5</u>	<u>\$-1.1</u>
Net Change	\$-2.0	\$0.2

Explanation of Change:

(U) The primary contributors to the Cost Variance change were a growth in Source Lines of Code (SLOC) by 9000 lines, a lower than planned software testing and integration productivity and General & Administrative and Cost of Money rate adjustments caused by interest rate increases.

The slight improvement in Schedule Variance was caused by the early transition of some Build 4 software configuration items from coding and unit testing to integration and system level testing.

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: 93.4% (\$1179.7 / \$1263.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY84-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2003)</u>	<u>Total</u>
RDT&E	1160.8	63.5	2.1	18.2	1244.6
Procurement	-	-	-	-	-
MILCON	18.9	-	-	-	18.9
O&M	-	-	-	-	-
Total	1179.7	63.5	2.1	18.2	1263.5

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FIXED DIST SYS (FDS), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1984				15.5	14.0	14.0	14.0	3.8
1985				17.0	15.9	15.9	15.9	3.4
1986				24.4	23.5	23.5	23.2	2.8
1987				33.6	33.3	33.2	33.2	2.7
1988				69.1	70.7	70.6	68.1	3.0
1989				94.1	100.3	100.3	98.7	4.2
1990				119.3	132.4	132.4	132.1	4.0
1991				176.0	202.3	201.9	195.5	4.3
1992				198.1	234.5	234.5	224.7	2.8
1993				119.5	144.9	144.9	140.7	2.7
1994				83.5	103.7	99.1	11.0	2.0
1995				66.8	85.3			2.7
1996				48.3	63.5			3.0
1997				1.6	2.1			3.0
1998				2.7	3.7			3.0
1999				2.6	3.7			3.0
2000				1.8	2.7			3.0

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FIXED DIST SYS (FDS), December 31, 1994

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2001				1.8	2.7			3.0
2002				1.7	2.7			3.0
2003				1.7	2.7			3.0
Subtot	1			1079.1	1244.6	1070.3	957.1	

Appropriation: 1205 Military Construction, Navy

1990				16.6	18.9	18.9	18.9	4.0
Subtot				16.6	18.9	18.9	18.9	
Grand Total	1			1095.7	1263.5	1089.2	976.0	

17. (U) Production Rate Data:

a. (U) Production Baseline Rate

None. Production program has been terminated.

b. (U) Cost and Quantity Variances --

No quantities are funded prior to 1998.

c. (U) Deliveries (Plan/Actual) -- None.

d. (U) Approved Design-to-Cost Objective -- N/A.

In light of the termination of the production program, Design to Cost Objectives are no longer applicable.

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FIXED DIST SYS (FDS), December 31, 1994

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.

(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.

~~(U)~~ Program Assumptions:

(U) The FDS will have an operational life of 24 years.

(b)(1)

(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

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18a. (U) Operating and Support Costs (Cont'd):

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:

(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.

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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 platform	Avg Annual Cost Per platform
Personnel	2.700	N/A
O&S Consumables	1.300	N/A
Direct Depot Maintenance	0.600	N/A
Sustaining Investment	10.100	N/A
Other Direct Costs	4.100	N/A
Indirect Costs	3.700	N/A
	0.000	N/A
Total	22.500	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	---	---	23.500	23.500
Industrial Fund	---	---	---	---	---
Total	---	---	---	23.500	23.500

Note: RDT&E Funding should be included in the 18.c. table as follows:

	FY1994 & Prior	FY1995	FY1996	Bal to Complete	Total
RDT&E	45.3	6.7	0.2	0.0	52.2
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	45.3	6.7	0.2	23.5	75.7

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MCS

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):
MANEUVER CONTROL SYSTEM (MCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM-OPTADS, SPAE-CC-MVR COL CARL L. LAMBETH
FORT MONMOUTH, NJ 07703-5405 Assigned: May 25, 1991
AV 992-4041 COMM 908-532-4041

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23740 (Shared) Project D484, D2HT

PROCUREMENT:

APPN 2035 ICN BA9320 (Army)
APPN 2035 ICN BA9710 (Army)
APPN 2035 ICN BS9710 (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). 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 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 CHS-2 Computers 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 program was continued by awarding a MCS System Engineering/Integration and Software Development contract which was awarded to Ford Aerospace and Communication Corporation (FACC). This five year effort continued the MCS evolutionary development. By 1986 the software had evolved to Version 9, was written in Ada, fielded with production TCTs in Europe, and ported to the Tactical Computer

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7a. Program Highlights (Cont'd):

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 evolutionary development effort was awarded to FACC (now Loral Command and Control Systems) for the software effort and a separate contract was awarded to TRW for the system engineering/integration effort. Under these efforts, Version 10 software was completed, and fielded in 1989.

MCS Version 11 software development effort was continued under Loral. However, Loral experienced 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 contract. The Army decided the MCS requirements could best be satisfied by an alternative other than continuing the Loral contract effort. The decision to discontinue the development contract beyond the current target contract price, was approved by the Army Acquisition Executive via a memorandum dated 24 February 1993.

A restructured MCS program strategy was presented to and approved in concept by the OSD C3I Committee on 11 March 1993. OSD formal approval was received via an Acquisition Decision Memorandum (ADM) dated 6 April 1993. 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, and a foundation of Common Operating Environment (COE) 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.

b. Significant Developments Since Last Report --

In August 1994 MCS V12.0 successfully completed an Integrated Interoperability Demonstration (as an MCS Operational Assessment) which was included as a part of the ATCCS level testing at Fort Hood, Texas. The MCS Operational Requirements Document (ORD) (26 October 1992) remains valid for Version 12.0. The PEO CCS directed the PM OPTADS to replan the program on 22 December 1994, due to the continued delays in the CHS-2 hardware contract award. This requires substituting a Limited User Test (LUT) for the the IOT&E. Also, the program will proceed toward a Low Rate Initial Production (LRIP) decision to procure CHS-2 hardware to be used for the MCS IOT&E. As a continuance of the MCS V12 effort, V12.01 will undergo a LUT and an IOT&E. V12.01 will meet Block III of the ORD as well as focus on Force Level Control, ATCCS level horizontal interoperability and dissemination of the "Common Picture of the Battlefield". The results of the LUT will provide the basis for a LRIP decision and we plan to ask the Under Secretary of Defense for Acquisition and

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7b. Program Highlights (Cont'd):

Technology to delegate the LRIP decision authority to the Army. The Block IV effort is basically a combat developer approved sequencing of pre-planned product improvements to the Block III baseline functionality, providing application and functionality enhancements which will reside on the software foundation developed under Block III. Block IV encompasses development of MCS software Versions 12.01, V12.1, V12.2 and V12.3 and fielding of this upgraded functionality to the Army, once each of the three versions have successfully passed a Follow On Test and Evaluation (FOT&E). Software enhancements in Version 12.1 through 12.3 include developing and analyzing basic course of action wargaming, and embedded training at the operator and staff section level.

MCS is expected to satisfy mission requirements.

c. Changes Since As Of Date -- None

8. Threshold Breaches:

There have been Schedule, Performance, and Cost breaches to the approved MCS Acquisition Program Baseline (APB) dated June 6, 1992. A Program Deviation Report and a revised APB have been submitted. There are Program Acquisition Unit Cost (PAUC) and Average Unit Procurement Cost (AUPC) Nunn-McCurdy unit cost breaches, both of which exceed 25%. These will require a Secretary of Defense Certification to Congress. See section 12 for additional data.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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			
Start	MAY 88	MAY 88	MAY 88

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
HQDA Project Mgt Review	N/A	FEB 92	FEB 92
Early User Test & Eval (EUT&E)	N/A	SEP 92	N/A
CHS Software Verification Test	MAY 91	N/A	N/A
System Tech Test	N/A	MAR 93	N/A
System Confidence Demo	N/A	MAR 93	N/A
IOT&E			
Start	N/A	MAY 93	N/A
Complete	N/A	JUN 93	N/A
FUE\IOC 1/	NOV 91	N/A	N/A
FUE	N/A	JUL 93	N/A
Follow-on Test & Evaluation	JAN 92	SEP 95	N/A
Milestone III ASARC	MAY 92	AUG 93	N/A
C3I Committee Review	N/A	SEP 93	N/A
First MCS Prod Buy of CHS	JUN 92	SEP 93	N/A
First Production Deliveries	OCT 92	JAN 94	N/A
IOC (includes VII & CHS)	N/A	SEP 94	N/A
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
Version 11 (CHS)	SEP 91	FEB 93	N/A
BLOCK III			
Common Hardware/Software			
OSD Restructure Approval ADM	N/A	N/A	APR 93(Ch-1)
MCS V12.0			
Integration/Test			
Start	N/A	N/A	APR 93(Ch-1)
Complete	N/A	N/A	AUG 94(Ch-1)
MCS Integration & Validation	N/A	N/A	SEP 93(Ch-1)
Compliance Test			
MCS V12.0 Operational Assessment	N/A	N/A	AUG 94(Ch-1)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
MCS V12.01			
Integration /Test			
Start	N/A	N/A	AUG 94 (Ch-1)
Complete	N/A	N/A	OCT 95 (Ch-1)
MCS V12.01 Limited User Test			
Start	N/A	N/A	NOV 95 (Ch-1)
Complete	N/A	N/A	DEC 95 (Ch-1)
Army Level Low Rate Initial Production Decision	N/A	N/A	FEB 96 (Ch-1)
V12.01 IOT&E			
Start	N/A	N/A	NOV 96 (Ch-1)
Complete	N/A	N/A	FEB 97 (Ch-1)
ASARC	N/A	N/A	JUN 97 (Ch-1)
Milestone III DAB	N/A	N/A	JUN 97 (Ch-1)
Initial Operational Capability (IOC)	N/A	N/A	NOV 97 (Ch-1)
BLOCK IV			
Release MCS Block IV RFP	N/A	N/A	SEP 95 (Ch-1)
Award MCS Block IV Contract	N/A	N/A	MAY 96 (Ch-1)
MCS V12.1			
Accept V12.1	N/A	N/A	MAR 98 (Ch-1)
FOT&E	N/A	N/A	AUG 98 (Ch-1)
MCS Version 12.2			
Accept V12.2	N/A	N/A	MAR 99 (Ch-1)
FOT&E	N/A	N/A	AUG 99 (Ch-1)
MCS Version 12.3			
Accept V12.3	N/A	N/A	MAR 00 (Ch-1)
FOT&E	N/A	N/A	AUG 00 (Ch-1)
Organic Support Capability	N/A	N/A	N/A (Ch-1)
CHS Hardware			
Service Support Depot Date	N/A	N/A	N/A (Ch-1)
CHS Hardware			

NOTE:

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.

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9b. Schedule (Cont'd):

b. Previous Change Explanations --

The schedule dates were changed from the SAR baseline (Dec 91) due to a program restructure. The CHS SW Verification Test, FUE/IOC were no longer applicable because the verification/testing concept changed from separate hardware and software to a systems testing, which consists of Common Hardware and V11 Software. The FOT&E schedule date 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 Acquisition Program Baseline (APB) the next schedule test was an FOT&E. That test was 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 was 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 (\$8.6M) 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 contractor's 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.

Milestones were added to the Dec 92 SAR, with the approval of the APB dated 6 June 1992. Due to Loral's failure to deliver Version 11 software on schedule and within cost, a decision was made by DA 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 was prepared and a revised MCS APB is in process.

c. Current Change Explanations --

(Ch-1) - The current milestones represent the PEO-CCS directed re-planned program supported by the President's Budget Feb 95. A revised MCS APB is in process.

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9d. Schedule (Cont'd):

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 16 October 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 06, 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demon- strated 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	5	5	/ 5	10	5
(V)1&(V)2					
Common	5	5	/ 5	TBD	5
Hardware/Software					
Purge Memory (within xx mins) 1/					
AN/UYQ-30/30A	3	3	/ 3	1.57	3
AN/UYQ-43	3	3	/ 3	1.32	3
(V)1&(V)2					
Common	3	3	/ 3	TBD	3
Hardware/Software					
Mean Time to Repair (hr) Organizational					
AN/UYQ-30/30A	.5	.5	/ .5	.5	.5
AN/UYQ-43	.5	.5	/ .5	.5	.5
(V)1&(V)2					
Common	.5	.5	/ .5	.5	.5
Hardware/Software					
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

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program <u>Objective/Threshold</u>		Demon- strated <u>Perf</u>	Current <u>Estimate</u>	
AN/UYQ-43	.76	.76	/ .76	.76	.76	
(V)1&(V)2						
Common	.88	.88	/ .76	TBD	.88	
Hardware/Software						
Continuity of						
Operations (hrs) 3/						
Common Hardware/	N/A	1	/ 1	TBD	1	
Software						
Fidelity (%)	N/A	.95	/ .95	TBD	.95	
Common Hardware/						
Software 4/						
Quality (hrs at Corps						
Level) 5/						
Common Hardware/	N/A	4	/ 4	TBD	4	
Software						
BLOCK III						
100% Memory Retention						
during power fluc/loss						
(at least xx mins)						
Common Hardware/	N/A	N/A	/ N/A	TBD	5	(Ch-1)
Software						
Purge Memory						
(within xx mins)/1						
Common Hardware/	N/A	N/A	/ N/A	TBD	3	(Ch-1)
Software						
Mean Time to Repair						
(hr) Organizational						
Common Hardware/	N/A	N/A	/ N/A	TBD	.5	(Ch-1)
Software						
Operational Avail						
(Ao)/2/6						
Common Hardware/	N/A	N/A	/ N/A	TBD	.88	(Ch-1)
Software /2/6						
SITMAP, Friendly	N/A	N/A	/ N/A	TBD	2	(Ch-1)
Resources and Intel						
Summary data						
consistency between						
Corps and Division @						
85-95% data integrity						
in hours:						

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
SITMAP, Friendly Resources and Intel Summary data consistency between any other two adjacent echelons @ 85-95% data integrity in hours:	N/A	N/A / N/A	TBD	1	(Ch-1)
SITMAP, Friendly Resources and Intel Summary data consistency between the TAC/Main/Rear within an echelon @ 85-95% data integrity in hours:	N/A	N/A / N/A	TBD	1	(Ch-1)
After planned tactical displacement and after MCS is set up and fully operational, availability of 85-95% the most recent Commanders Situation Report in minutes:	N/A	N/A / N/A	TBD	90	(Ch-1)
After unplanned outage and after MCS is again fully operational availability of 85-95% the most recent Commanders Situation Report in hours:	N/A	N/A / N/A	TBD	3	(Ch-1)
Display times for predefined MCS information resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	35	(Ch-1)
Display times for user defined MCS information resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	65	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Display times for predefined MCS information non-resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	65	(Ch-1)
Display times for user defined MCS informaton non-resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	130	(Ch-1)
Data integrity of direct computer-to-computer data interchanges with BFAs, joint, available MFA and combined systems IAW applicable UIRs in %:	N/A	N/A / N/A	TBD	.85	(Ch-1)
BLOCK IV					
100% Memory Retention during power fluc/loss (at least xx mins)					
Common Hardware/ Software	N/A	N/A / N/A	TBD	5	(Ch-1)
Purge Memory (within xx mins)					
Common Hardware/ Software /1	N/A	N/A / N/A	TBD	3	(Ch-1)
Mean Time To Repair (hr) Organizational					
Common Hardware/ Software	N/A	N/A / N/A	TBD	.5	(Ch-1)
Operational Avail (Ao)/2/6					
Common Hardware/ Software	N/A	N/A / N/A	TBD	.76	(Ch-1)
Continuity of Operations (hrs)/3/6					
Common Hardware/ Software	N/A	N/A / N/A	TBD	1	(Ch-1)
Fidelity (%) /4					
Common Hardware/ Software	N/A	N/A / N/A	TBD	.85	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
Quality (hrs) at Corps Level/5/6					
Common Hardware/ Software	N/A	N/A / N/A	TBD	4	(Ch-1)
SITMAP, Friendly Resources and Intel Summary data consistency between Corps and Division @ 90-100% data integrity in hours:	N/A	N/A / N/A	TBD	2	(Ch-1)
SITMAP, Friendly Resources and Intel Summary data consistency between any other two adjacent echelons @ 90-100% data integrity in hours:	N/A	N/A / N/A	TBD	1	(Ch-1)
SITMAP, Friendly Resources and Intel Summary data consistency between TAC/Main/Rear within an echelon @ 90-100% data integrity in hours:	N/A	N/A / N/A	TBD	1	(Ch-1)
After planned tactical displacement and after MCS is set up and fully operational, availability of 90-100% the most recent Commanders Situation Report in hours:	N/A	N/A / N/A	TBD	1	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
After unplanned outage and after MCS is again fully operational availability of 90-100% the most recent Commanders Situation Report in hours:	N/A	N/A / N/A	TBD	2	(Ch-1)
Display times for predefined MCS information resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	20	(Ch-1)
Display times for user defined MCS information resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	35	(Ch-1)
Display times for predefined MCS information non-resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	35	(Ch-1)
Display times for user defined MCS information non-resident on an MCS device in seconds:	N/A	N/A / N/A	TBD	70	(Ch-1)
Data integrity of direct computer-to-computer data interchanges with BFAs, joint, available MFA and combined systems IAW applicable UIRs in %:	N/A	N/A / N/A	TBD	.90	(Ch-1)

NOTE:

- 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 partitions shall not display more than 1 hour

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10a. Performance Characteristics (Cont'd):

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.

6p/ Contract Specs - Performance parameters are consistent with DA2028 changes that update the MCS ORD for Block IV. Contract Specs are not applicable for Operational Availability because the equipment is in the hands of the unit and beyond the control of the contractor.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) - The added performance parameters represent the PEO CCS directed re-planned program and are consistent with DA2028 changes that update the MCS ORD for Block IV.

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 16 October 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 06, 1992.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	215.2	231.0	257.2
Procurement	545.5	443.1	387.7
Flyaway	(451.3)		(296.3)
Support Fielding Costs			(52.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(94.2)		(39.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 80 Base-Year \$	760.7	674.1	644.9

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11a. Total Program Cost and Quantity (Cont'd):

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	511.4	464.7	444.2
Development (RDT&E)	(123.1)	(136.0)	(157.9)
Procurement	(388.3)	(328.7)	(286.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1272.1	1138.8	1089.1

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>6365</u>	<u>5667</u>	<u>3253</u>
Total	6365	5667	3253

A unit of measure equates to one MCS Tactical Computer Suite including installation kits, peripherals and common off-the-shelf software.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated October 16, 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 06, 1992.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (JUN 92 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY80\$)	644.9	674.1	
(2) Quantity	3253	5667	
(3) Unit Cost	0.198	0.119	66.662

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12. Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY80\$)	387.7	443.1	
(2) Quantity	3253	5667	
(3) Unit Cost	0.119	0.078	52.427

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (JUN 92 APB)	<u>Percent Change</u>
c. Total Program			
(1) Cost (TY\$)	1089.1	1138.8	
(2) Unit Cost	0.335	0.201	66.606
d. Procurement			
(1) Cost (TY\$)	674.0	771.8	
(2) Unit Cost	0.207	0.136	52.133

e. Changes from the Baseline Report - Not Applicable

f. Changes from the Previous SAR (DEC 93 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY80\$)	0.089	81.651
(2) PAUC (BY80\$)	0.044	58.667
(3) PAUC Quantity	-2414	-42.597
(4) PAUC (TY\$)	0.133	65.842
(5) AUPC (TY\$)	0.074	55.639

g. Initial SAR

(1) Program Acquisition Cost (BY\$) --	674.1
(2) Program Acquisition Cost (TY\$) --	1138.8

Baseline SAR - Dec 91

Initial SAR - Dec 91

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12. Unit Cost Summary (Cont'd):

h. Unit Cost Changes.

(1) PAUC --

Due to the continued delays in the CHS-2 contract, PM OPTADS was directed on 22 December 1994 by PEO CCS to replan the program. This replanning entails adding a Limited User Test (LUT) prior to the Initial Operational Test & Evaluation (IOT&E). Also the program will proceed toward an Army Level Low Rate Initial Production (LRIP) decision to procure CHS-2 hardware to be used for subsequent testing and the MCS IOT&E. The APB June 92 procurement costs were based on CHS-1 contractual data. The Dec 94 SAR procurement costs are based on anticipated CHS-2 data. The primary differences are: MCS is going from a CHS-1 380 computer to a CHS-2 Sun equivalent, increasing the processor to a Sun Super Sparc II, 32 MB to 256 MB, disk size from 580 MB to 26 GB, a display unit of 16" to 19" and a dot matrix printer to a Laser printer. There has been an increase in the COTS Software Licenses from a V2 Uniplex to an Informix V7. The MCS quantities have decreased due to a revised draft ATCCS fielding requirements document (Greenbook) dated Jan 95. The unit cost increased, due to the Common Operating Environment (COE) that is GFE to MCS which requires a larger capacity computer.

(2) AUPC --

The APB June 92 procurement costs were based on CHS-1 contractual data. The Dec 94 SAR procurement costs are based on anticipated CHS-2 data. The primary differences are, MCS is going from a CHS-1 380 computer to a CHS-2 Sun equivalent, increasing the processor to a Sun Super Sparc II, 32 MB to 256 MB, disk size from 580 MB to 26 GB, a display unit of 16" to 19" and a dot matrix printer to a Laser printer. There has been an increase in the COTS Software Licenses from a V2 Uniplex to an Informix V7. The MCS quantities have decreased due to a revised draft ATCCS fielding requirements (Greenbook) Jan 95. The unit cost increased, due to the Common Operating Environment (COE) that is GFE to MCS, which requires a larger capacity computer.

i. Impact of Performance or Schedule Changes on Unit Cost.

The unit cost has not been affected by performance. The unit cost increased due to the delays in the CHS-2 hardware contract and replanning the MCS program by adding a LUT prior to the IOT&E and adding an Army Level LRIP decision to procure CHS-2 hardware which impacted the schedule.

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12. Unit Cost Summary (Cont'd):

j. Program Management and Control.

Program Executive Officer - MG William Campbell
Project Manager - COL Carl L. Lambeth

k. Cost Control Actions.

CHS-2 hardware are commercial items being procured off of the PM CHS firm fixed price contract. The MCS program is currently utilizing contracting vehicles from the PEO CCS and CECOM to achieve desired software integration work. These contracts are Time and Material based, not Cost Plus based and detailed cost reporting is limited. PM OPTADS does not currently have a prime software integration contractor. However, the PM is tracking funding expenditures to a work plan on a monthly basis.

l. Contract Information -- None.

m. Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

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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	-5.3	+19.2	-	+13.9
Quantity	-	-106.3	-	-106.3
Schedule	-	+13.7	-	+13.7
Engineering	-	+14.3	-	+14.3
Estimating	+51.3	-175.5	-	-124.2
Other	-	-	-	-
Support	-	+72.9	-	+72.9
Subtotal	+46.0	-161.7	-	-115.7
Current Changes:				
Economic	-0.9	-12.8	-	-13.7
Quantity	-	-108.3	-	-108.3
Schedule	-	7.8	-	+7.8
Engineering	-	-	-	-
Estimating	31.7	87.3	-	+119.0
Other	-	-	-	-
Support	-	-72.1	-	-72.1
Subtotal	+30.8	-98.1	-	-67.3
Total Changes	+76.8	-259.8	-	-183.0
Current Estimate	415.1	674.0	-	1089.1

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	215.2	545.5	0.0	760.7
Previous Changes:				
Quantity	-	-58.6	-	-58.6
Schedule	-	-0.2	-	-0.2
Engineering	-	+8.2	-	+8.2
Estimating	+26.1	-97.3	-	-71.2
Other	-	-	-	-
Support	-	+31.4	-	+31.4
Subtotal	+26.1	-116.5	-	-90.4
Current Changes:				
Quantity	-	-47.1	-	-47.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	15.9	40.0	-	+55.9
Other	-	-	-	-
Support	-	-34.2	-	-34.2
Subtotal	+15.9	-41.3	-	-25.4
Total Changes	+42.0	-157.8	-	-115.8
Current Estimate	257.2	387.7	-	644.9

b. Previous Change Explanations --

RD&E

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Estimating: Adjustment for current and prior inflation. Revised estimate associated with reprogramming of R&D funding FY90-FY00. Revised estimate associated with reprogramming of R&D funding FY93-FY00. Revised estimate based on reduced funding in FY94-FY00.

Procurement

Economic: Revised escalation indices. Economic adjustment for negative program change.

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13b. Cost Variance Analysis (Cont'd):

Quantity: Reduction in Active Army Force Structure from 6365 to 5667. A correction to the Dec 91 SAR to recategorize from a Schedule change to a Quantity change.

Schedule: One year production delay due to a slip of the IOTEE test from May 92 to Mar 93. Change in procurement buy schedule, program slipped two years. A correction to the Dec 91 SAR to recategorize from a Schedule change to a Quantity change. A change in annual procurement buy profile from FY-95 to FY-96.

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. Adjustment for Current & Prior Inflation. Reconcile differences between flyaway and support due to changes in cost estimating assumptions and techniques.

Support: Transition of OMA support dollars to OPA support dollars. Adjustment for Current & Prior Inflation. 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/Fielding costs have decreased due to realignment of a support element to flyaway and changes in support/fielding requirements. A correction to the Dec 91 SAR to recategorize from a Support change to an Estimating change. A decrease in spare requirements pending approval of a new restructured program. Increase in support/fielding costs due to changes in requirements associated with a 3 year stretch in the program.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTEE</u>		
Revised escalation indices. (Economic)	N/A	-0.9
Adjustment for Current & Prior Inflation. (Estimating)	+0.4	+0.4

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
A 1+ year delay (from FY94 to FY95) in CHS-2 award to allow completion of MCS Block III and delay in releasing MCS Block IV contract due to funding shortfalls stretched R&D efforts. (Estimating)	+15.5	+31.3
RDTEE Subtotal	+15.9	+30.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-10.0
Economic Adjustment for Negative Program Change. (Economic)	N/A	-2.8
Adjustment for Current & Prior Inflation. (Estimating)	+2.5	+3.5
Quantity Variance resulting from decrease of 2414 units from 5667 to 3253, due to change in program requirements. (Quantity)	-47.1	-108.3
Due to continued delays in CHS-2 contract, PM OPTADS was directed to replan the program to reflect a LUT in FY95 (R&D) and an LRIP in FY96 (Proc), causing an increase in schedule. (Schedule)	--	+7.8
A revised estimate to account for a restructured program based on anticipated CHS-2 costs which are higher than CHS-1. (Estimating)	+37.5	+83.8
Adjustment for Current & Prior Inflation. (Support)	+0.5	+0.8
Initial Spares increased due to a change in requirements. (Support)	+1.1	+3.1
Support/Fielding decreased due to changes in methodology based on anticipated CHS-2 costs and a decrease of 2414 computers. (Support)	-35.8	-76.0
Procurement Subtotal	-41.3	-98.1

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.200	--	0.126	0.007	0.004	-0.002	--	--	0.135	0.335

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 64.0% (16 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 62.7% (\$683.1 / \$1089.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY80-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RD&E	285.1	24.1	25.8	80.1	415.1
Procurement	398.0	13.9	15.9	246.2	674.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	683.1	38.0	41.7	326.3	1089.1

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16c. Program Funding Summary (Cont'd):

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				8.5	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				15.7	19.9	19.9	19.9	4.0
1984				12.6	16.5	16.5	16.5	3.8
1985				23.5	31.8	31.8	31.8	3.4
1986				8.6	11.9	11.9	11.9	2.8
1987				8.8	12.6	12.6	12.6	2.7
1988				9.4	14.0	14.0	14.0	3.0
1989				7.7	11.9	11.9	11.9	4.2
1990				7.0	11.3	11.3	11.3	4.1
1991				10.6	17.8	17.8	17.8	4.3
1992				21.5	36.8	36.8	33.1	3.0
1993				15.2	26.8	26.8	16.2	2.7
1994				8.8	15.9	15.9	12.9	2.0
1995				9.2	17.1	6.8	1.0	2.7
1996				12.6	24.1			3.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obliga- ted	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997				13.1	25.8			3.0
1998				12.6	25.6			3.0
1999				8.6	17.9			3.0
2000				7.4	16.0			3.0
2001								
2002				9.0	20.6			3.0
Subtot				257.2	415.1	274.8	251.7	

Appropriation: 2035 Other Procurement, Army

1983	34	2.0	18.0	21.0	27.7	27.7	27.7	4.0
1984	31	0.2	20.7	21.8	29.5	29.5	29.5	3.8
1985	38	0.2	19.9	21.7	30.4	30.4	30.4	3.4
1986	103	0.4	38.3	45.9	66.0	66.0	66.0	2.8
1987	705	0.1	39.7	47.5	70.6	70.6	70.6	2.7
1988	887	1.1	53.5	73.7	114.3	114.3	114.3	3.0
1989			5.9	5.9	9.6	9.6	9.6	4.2
1990			11.4	11.4	19.1	19.1	19.1	4.1
1991			3.5	3.5	6.0	6.0	5.7	4.3

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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)

1992			2.2	4.5	8.0	7.9	7.4	3.0
1993			9.3	9.3	16.8	16.1	6.9	2.7
1994								2.0
1995								2.7
1996	90		4.9	7.1	13.9			3.0
1997	80		4.5	7.9	15.9			3.0
1998	90		4.9	8.1	16.9			3.0
1999	112		5.5	9.3	19.9			3.0
2000	158		7.2	11.3	24.9			3.0
2001	241		11.2	17.5	39.8			3.0
2002	261		12.7	24.1	56.4			3.0
2003	244		12.0	20.3	48.9			3.0
2004	179		7.0	15.9	39.4			3.0
Subtot	3253	4.0	292.3	387.7	674.0	397.2	387.2	
Grand Total	3253	4.0	292.3	644.9	1089.1	672.0	638.9	

The recurring costs from FY89 through FY93 were for hardware component upgrades and for software development through FY90 and no end items were purchased.

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17. Production Rate Data:

a. Deliveries (Plan/Actual) --		<u>To Date</u>
	RDTE	10/10
	Procurement	1798/1798

b. 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 usage rates. Costs are based on an operating life of 20 years. Common Hardware Software-2 (CHS-2) equipment life is 10 years, therefore CHS-2 equipment will be reprocured and replaced after 10 years. MCS has no dedicated crew. The CHS-2 equipment will be fielded to the Active Force. 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 CHS-2 equipment. POL is needed for all the vehicles and generators to support the CHS-2 equipment. Other direct costs include, training (replacement training, Instructor/key personnel, 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-2 rebuy, and Common ATCCS costs.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Thousands)

Cost Element	MCS Avg Annual Cost Per Equipment	Avg Annual Cost Per Equipment (Antecedent)
REPLENISHMENT SPARES	1.6	N/A
REPLENISHMENT REPAIR PTS	2.8	N/A
POL	0.4	N/A
DEPOT MAINTENANCE	3.3	N/A
TRANSPORTATION	1.1	N/A
PDSS	0.5	N/A
SYSTEM PROJ MGT	0.1	N/A
MODIFICATIONS	1.9	N/A
CONSUMABLES	0.1	N/A
OTHER	53.5	N/A
Total	65.3	N/A

SOURCE OF DATA: Draft Program Office Estimate (POE) March 1995.
Annual O&S costs per equipment are input in thousands of dollars:
Replenishment Spares = \$1,638.00, Replenishment Repair Parts =
\$2,772.00, POL = \$405.00, Depot Maintenance = \$3,282.00,
Transportation = \$1,110.00, Software Support (PDSS) = \$477.00, System
Project Management (SPM) = \$107.00, Training = \$21.00, Consumables =
\$84.00, Software Modifications = \$1,890.00, Other O&S includes all
manufacturing and O&S costs associated with the CHS-2 rebuy =
\$53,500.00.

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18c. Operating and Support Costs (Cont'd):

**c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)**

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
DEPOT MAINT	2.5	---	---	---	2.5
INDUSTRIAL FUNDS	---	---	---	---	---
Total	2.5	---	---	---	2.5

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A-24 SADARM

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SADARM

AS OF DATE: December 31, 1994

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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 COL. WILLIAM J. ERVIN
SENSE & DESTROY ARMOR (SADARM) Assigned: June 11, 1993
ATTN: SFAE-FAS-SD AV 880-2573 COMM 201-724-2573
PICATINNY ARSEN, NJ 07806-5000

The Sense and Destroy Armor (SADARM) System includes:

(1) Projectile, 155mm, M898 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, D2ST

CLEARED
FOR OPEN PUBLICATION

AS AMENDED
MAR 24 1995

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DD-FIA)
DEPARTMENT OF DEFENSE

[Signature]
MAR 1995
PROJECT, RDA

~~Classified by SADARM 222-222-16 April 1992~~
~~Declassify on: OADR~~
~~Downgrade Instructions: Downgrade unclassified information to the lowest possible classification~~

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 2034 ICN E66300 (Army)

5. (U) Related Programs:

M109 Howitzer; M198 Howitzer; M109A6.

6. (U) Mission and Description:

The SADARM smart munitions will provide an enhanced counterfire capability for the 155mm Howitzer delivery system 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 munition is 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 Munition 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, and in an Operational Requirements Document (ORD) dated 3 August 1994. 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. In July 1989, both FSD submunition/projectile contractors scored hits with live 8 inch hardware in the Congressional Demonstration Test. However, the requirement for the 8 inch SADARM had been previously eliminated when the Army developed plans to retire the 8 inch howitzer from the inventory.

In 1991, 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 (USD(A)) recertified the 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

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7a. (U) Program Highlights (Cont'd):

reductions. After an extensive design select effort in which both competing EMD contractors scored direct hits with 155mm SADARM projectiles in March 1991, the Aerojet design was chosen for EMD completion. Aerojet and Alliant teamed together in a Prime/Sub arrangement.

Due to testing delays, the planned FY 93 155mm procurement start was delayed. Due to affordability, the MLRS Production Start was delayed by one year to FY 95, and quantities were reduced during the FY 95 - FY 99 timeframe. In addition, the basic MLRS rocket production was not funded during this timeframe. This caused an increase to the total procurement cost of the MLRS SADARM in excess of the 5% Acquisition Program Baseline (APB) threshold.

In July 1993, although there were 9 direct hits from 21 155mm SADARM projectiles fired, the performance phase of Technical Testing was halted before completion due to submunition reliability being less than anticipated. An independent Failure Analysis team was chartered by the Program Executive Officer (PEO) to investigate the reliability problem. The team concluded that all problems were solvable, potential fixes were identified, and that additional testing was required to prove out the fixes and provide confidence to meet reliability objectives. On 2 September 1993, the Army staff approved a program restructure to provide corrective actions, increase reliability, and resume technical and operational testing. The FY 94 Congressional Language for the Defense Budget significantly impacted the SADARM program. The DoD Appropriations Language for 1994 directed that the SADARM program should be terminated in FY 94, and provided \$28.5M for termination. Subsequently, the National Defense Authorization Act for FY 94 provided \$28.5M to maintain the SADARM program in a "standby status" while it conducted additional analyses of the program, and report back to Congressional Defense Committees on the results by May 1994. On 2 December 1993, the DA Office of the General Counsel determined that since Congress had not legislatively directed the Army to terminate the SADARM program, that the Army could expend \$28.5M in FY 94 RDT&E to carry out committee-recommended analyses and re-evaluations of the SADARM program. In the meantime, significant progress was made in identifying appropriate fixes to improve reliability and eliminate duds. To accommodate the FY 94 funding constraints, significant program reductions were made from the Army approved plan. All work on the MLRS SADARM was discontinued. Only those corrective actions that could be accomplished within the appropriated amount were undertaken on a priority basis, with system testing of the corrective actions planned prior to the May 1994 report date requested by Congress.

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7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
In April 1994, thirteen 155mm SADARM projectiles were fired to determine if the corrective actions implemented were successful. There were eleven direct hits and no duds. The performance exceeded the ORD requirements for entering Low Rate Production (LRP). The test results were provided to Congress in May 1994. In October 1994, Congress approved an emergency reprogramming of \$13.6M to restart the EMD effort to implement and test the remaining corrective actions for problems which occurred only at the longest ranges. The FY 95 Appropriations Act provided sufficient funds for EMD in FY 95 as well as for a FY 95 procurement start for the 155mm SADARM. Fuze, Safe, & ARM (FSA) testing in November 1994 confirmed that the fixes to that subsystem were successful with 52 for 52 FSA's functioning correctly at the temperature and range extremes. Corrective actions for the submunition to submunition collisions were identified and a limited number of tests were conducted. All corrective actions will be fully implemented and tested prior to deliveries of the FY 95 quantities.

The FY 96 President's Budget did not provide funds for the MLRS SADARM. This report provides notice of its termination. The 155mm projectile quantity was increased from 39018 to 73612 in accordance with the Cost and Operational Effectiveness Analysis (COEA) for a 155mm only program. Although the quantity of 155mm SADARM's has increased, the loss of the MLRS SADARM co-production has caused increases to the 155mm SADARM cost. The Total Procurement Cost breach is a result of the increase in 155mm SADARM quantity due to the loss of the MLRS SADARM.

Based on the termination of the MLRS SADARM, it is anticipated that this will be the final report which includes MLRS SADARM.

The SADARM system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --
On 13 Jan 1995, The Army Systems Acquisition Review Council (ASARC) recommended a FY 95 LRP production start for the 155mm SADARM. Approval for LRP is expected after the 30 Mar 1995 Defense Acquisition Board (DAB).

8. (U) Threshold Breaches:

There are cost and schedule breaches for the 155mm SADARM to the approved Acquisition Program Baseline (APB) dated 6 September 1991.

There are schedule breaches for the MLRS SADARM to the APB dated 6 September 1991.

A Program Deviation Report and revised APB have been submitted.

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8. (U) Threshold Breaches (Cont'd):

There is an Average Unit Procurement Cost (AUPC) Nunn-McCurdy breach to the 155mm SADARM projectile of more than 15%. See Section 12 for additional details.

There is a Program Acquisition Unit Cost (PAUC) Nunn-McCurdy Breach to the MLRS SADARM caused by program termination. See Section 12 for additional details.

The Aerojet contract has breached the September 1991 Contract Cost Baseline in excess of 15%.

9. (U) Schedule:

155mm SADARM Projectile

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	FEB 96(Ch-1)
Milestone IIIA-155mm SADARM	N/A	APR 93	MAR 95(Ch-1)
155mm SADARM LRIP Contract Award	N/A	APR 93	APR 95(Ch-1)
LRP First Delivery	N/A	N/A	OCT 96(Ch-2)
155mm SADARM IOT&E Start	JUL 91	JUL 93	JUN 98(Ch-1)
Complete	DEC 91	OCT 93	JUL 98(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 III (DAB) - 155mm and MLRS	APR 92	JUN 94	DEC 98(Ch-1)

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9a. (U) Schedule (Cont'd):
155mm SADARM Projectile

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
155mm SADARM Full Scale Production Award	MAY 92	JUN 94	JAN 99(Ch-1)
IOC/First Unit Equipped-155mm SADARM	JUL 93	JUL 94	JUL 99(Ch-1)
Organic Support Capability	N/A	N/A	JUL 99(Ch-2)

b. (U) Previous Change Explanations --

The Congressional Demonstration End was rescheduled from April 1989 to July 1989 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 of a 48-month Acquisition Plan was changed from April 1986 to N/A. It was deleted from the 6 September 1991 APB. The 155mm Tech Test Start changed from August 1991 to July 1991 to reflect the actual date of accomplishment.

The following milestones were changed as a result of extending the EMD program by one year. The Under Secretary of Defense for Acquisition (USD(A)) approved the changes in his memorandum of December 1992. Tech Test Complete was changed from NOV 92 to JUL 93. Milestone IIIa was changed from MAR 93 to SEP 93. IOT&E Start was changed from JUL 93 to OCT 93. LRIP Contract Award was changed from APR 93 to NOV 93. IOT&E Complete was changed from OCT 93 to JUL 94. Milestone III DAB - 155mm & MLRS was changed from JUN 94 to JUN 95. Full Scale Production Award was changed from JUN 94 to OCT 95. IOC/First Unit Equipped was changed from JUL 94 to SEP 95.

The following milestones were changed in 1993 because of the submunition reliability problem. Tech Test Complete was changed from JUL 93 to AUG 95. Milestone IIIa was changed from SEP 93 to DEC 95. LRIP Contract Award was changed from NOV 93 to FEB 96. IOT&E Start was changed from OCT 93 to JUL 96. IOT&E Complete was changed from JUL 94 to DEC 96. Milestone III DAB - 155mm & MLRS was changed from JUN 95 to SEP 97. Full Scale Production Award was changed from OCT 95 to DEC 97. IOC/First Unit Equipped was changed from SEP 95 to MAR 98.

c. (U) Current Change Explanations --

(Ch-1) As a result of restarting the EMD program with a FY 95 production start and four year Low Rate Production (LRP) acquisition strategy, the following milestones were changed.

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9c. (U) Schedule (Cont'd):
155mm SADARM Projectile

	FROM	TO
155mm SADARM Tech Tests, Start	AUG 95	FEB 96
Milestone IIIa-155mm SADARM	DEC 95	MAR 96
155mm LRIP Contract Award	FEB 96	APR 96
155mm SADARM IOT&E Start	JUL 96	JUN 98
155mm SADARM IOT&E Complete	DEC 96	JUL 98
Milestone III (DAB)	SEP 97	DEC 98
155mm SADARM Full Rate Production Award	DEC 97	JAN 99
IOC/First Unit Equipped-155mm SADARM	MAR 98	JUL 99

(Ch-2) The following milestones were added as a result of the restructured program.

LRP First Delivery	N/A	OCT 96
Organic Support Capability	N/A	JUL 99

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated 24 July 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated September 06, 1991.

MLRS SADARM Rocket

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
DA Approval SADARM (155mm & MLRS) ROC	MAR 86	MAR 86	MAR 86
MLRS SADARM Initial Integration	DEC 86	DEC 86	DEC 86
Contract Award			
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
Complete	DEC 91	JAN 93	MAY 96
Type Classification (Limited)	JAN 92	N/A	N/A
MLRS SADARM IOT&E			
Start	NOV 92	SEP 93	N/A (Ch-1)
Complete	JUL 93	FEB 94	N/A (Ch-1)
Milestone III (DAB) - 155mm and MLRS	APR 92	JUN 94	N/A (Ch-1)
Type Classification	SEP 93	N/A	N/A

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9a. (U) Schedule (Cont'd):
MLRS SADARM Rocket

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>	
MLRS SADARM Full Scale Production Award	APR 94	JUN 94	N/A	(Ch-1)
IOC/First Unit Equipped-MLRS SADARM	MAY 94	DEC 95	N/A	(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 January 1993 to December 1992.

The following milestones were changed as a result of extending the EMD program by one year. The USD(A) approved the changes in his memorandum of December 1992. Tech Test Start was changed from JUL 92 to DEC 92. Tech Test Complete was changed from DEC 92 to OCT 93. IOT&E Start was changed from SEP 93 to OCT 94. IOT&E Complete was changed from FEB 94 to NOV 94. Milestone III (DAB) - 155 and MLRS was changed from JUN 94 to JUN 95. Full Scale Production Award was changed from JUN 94 to DEC 95. IOC/First Unit Equipped was changed from DEC 95 to FEB 97.

The following milestones were added in 1992: Milestone IIIa - MLRS SADARM, SEP 93; and MLRS SADARM LRP Contract Award, DEC 94.

The following milestones were changed in 1993 because of the submunition reliability problem. Milestone IIIa - MLRS SADARM was changed from SEP 93 to DEC 95. Tech Test Complete was changed from OCT 93 to MAY 96. MLRS SADARM LRP Contract Award was changed from DEC 94 to JAN 97. IOT&E Start was changed from OCT 94 to MAR 97. IOT&E Complete was changed from NOV 94 to APR 97. Milestone III (DAB) - 155 and MLRS was changed from JUN 95 to SEP 97. Full Scale Production Award was changed from DEC 95 to JAN 98. IOC/First Unit Equipped was changed from FEB 97 to JUN 99.

c. (U) Current Change Explanations --

(Ch-1) All MLRS SADARM milestones are no longer applicable. The MLRS SADARM has been terminated due to lack of funding.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline, dated 24 July, 1989.

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9d. (U) Schedule (Cont'd):
MLRS SADARM Rocket

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated September 06, 1991.

10. (U) Performance Characteristics:
155mm SADARM Projectile

a. (U) Performance --		Approved Program			Demon- strated	Current
	DE	Objective/Threshold			Perf	Estimate
(b)(1)						
155mm Max Range (km) (M109A w/M185)						
155mm Max Range (km) (M109A2/A3 w/M185)	17.9	17.9	/ 17.9	17.9	17.9	
155mm Max Range (km) (M198 series)	22.5	22.5	/ 22.5	22.5	22.5	
155mm Max Range (km) (M109HIP)						
155mm Max Range (km) (M109 A3/E2 HIP)	22.5	30	/ 22.5	22.5	22.5	
(b)(1)						
Storage Life (all SADARM munitions) (yrs)	10	10	/ 10	10	10	
155mm Carrier Reliability	0.90	.90	/ .90	.98	.98	
Submunition Reliability (155mm)	0.80	.80	/ .80	.61*	.80	
Submunition Self Destruct	N/A	N/A	/ N/A	TBD**	.95	(Ch-2)

*The Demonstrated Submunition Reliability has increased from 0.40 to 0.61 as a result of testing conducted in April 1994.

**None of our testing to date has tested specifically for this parameter.

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10b. (U) Performance Characteristics (Cont'd):
155mm SADARM Projectile

b. (U) Previous Change Explanations --

(U) As a result of recent captive flight tests and lethal mechanism tests, the following estimates of performance have been updated:

(b)(1)

(U) The estimated 155mm Carrier Reliability increased from .90 to .98 as a result of the increased demonstrated reliability.

c. (U) Current Change Explanations --

(b)(1)

(U) (Ch-2) The following performance characteristic was added in the ORD dated 3 August 1994

	Objective	Threshold	PM Estimate
Submunition Self Destruct	0.95	0.95	0.95

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline, dated July 24, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated September 06, 1991.

MLRS SADARM Rocket

a. (U) Performance --

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(U) MLRS Ek (SPH) (1 Rocket)				
MLRS Max Range (km)	30	30 / 30	30	N/A (Ch-1)
Storage Life (all SADARM Munitions) (yrs)	10	10 / 10	10	N/A (Ch-1)
MLRS Carrier Reliability	0.90	0.90 / 0.90	.90	N/A (Ch-1)

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SADARM, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):
MLRS SADARM Rocket

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
Submunition Reliability (MLRS)	0.80	0.80 / 0.80	.50	N/A	(Ch-1)

b. (U) Previous Change Explanations --

- (U) The estimated MLRS Carrier Reliability increased from .90 to .93.
(U) The estimated MLRS Max Range (km) has increased from 30 to 35.

(b)(1)

c. (U) Current Change Explanations --

(Ch-1) MLRS SADARM Rocket performance characteristics are no longer applicable. The MLRS SADARM was terminated due to lack of funding.

d. (U) References --

- (U) Development Estimate:
DAE Approved Acquisition Program Baseline, dated 24 July, 1989.
- (U) Approved Program:
DAE Approved Acquisition Program Baseline dated September 06, 1991.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
155mm SADARM Projectile

a. (U) Cost --	Development <u>Estimate</u>	Approved Program	Current <u>Estimate</u>
Development (RDT&E)	237.7	231.9	317.4
Procurement	248.0	667.8	1480.6
	(248.0)		(1441.3)
Non-recurring flyaway			(23.8)
Total Flyaway	(248.0)		(1465.1)
Pallets			(2.6)
Peculiar Support	(0.0)		(12.9)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 89 Base-Year \$	485.7	899.7	1798.0

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11a. (U) Total Program Cost and Quantity (Cont'd):

155mm SADARM Projectile

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	49.4	356.5	1081.8
Development (RDT&E)	(8.2)	(19.4)	(37.4)
Procurement	(41.2)	(337.1)	(1044.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	535.1	1256.2	2879.8

b. (U) Quantity --

Development (RDT&E)	132	0	166
Procurement	<u>10156</u>	<u>39018</u>	<u>73532</u>
Total	10288	39018	73698

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 September 06, 1991.

MLRS SADARM Rocket

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	416.4	576.6	558.0
Procurement	703.6	1730.9	0.0
Flyaway	(699.2)		(0.0)
Other Wpn Sys Cost	(4.4)		(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)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	1120.0	2307.5	558.0

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11a. (U) Total Program Cost and Quantity (Cont'd):
MLRS SADARM Rocket

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	131.7	1104.7	31.8
Development (RDT&E)	(10.9)	(37.6)	(31.8)
Procurement	(120.8)	(1067.1)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1251.7	3412.2	589.8

b. (U) Quantity --			
Development (RDT&E)	0	0	8
Procurement	0	<u>23712</u>	<u>0</u>
Total	0	23712	8

Note: Excludes 16 RDTE prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

No quantities were defined for the MLRS SADARM at the time the Development Estimate (SAR 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 September 06, 1991.

12. (U) Unit Cost Summary:

155mm SADARM Projectile

	<u>Current Estimate (DEC 94 SAR)</u>	<u>UCR Baseline (SEP 91 APB)</u>	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY89\$)	1798.0	899.7	
(2) Quantity	73698	39018	
(3) Unit Cost	0.024	0.023	5.804

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12. (U) Unit Cost Summary (Cont'd):

155mm SADARM Projectile

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY89\$)	1480.6	667.8	
(2) Quantity	73532	39018	
(3) Unit Cost	0.020	0.017	17.647

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (SEP 91 APB)	<u>Percent Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	2879.8	1256.2	
(2) Unit Cost	0.039	0.032	21.370
d. (U) Procurement			
(1) Cost (TY\$)	2525.0	1004.9	
(2) Unit Cost	0.034	0.026	33.330

e. (U) Changes from the Baseline Report - Not Applicable

f. (U) Changes from the Previous SAR (SEP 93 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY89\$)	0.001	4.348
(2) PAUC (BY89\$)	0.005	33.333
(3) PAUC Quantity	34428	87.670
(4) PAUC (TY\$)	0.006	18.182
(5) AUPC (TY\$)	0.010	41.667

g. (U) Initial SAR

(1) Program Acquisition Cost (BY\$) --	894.5
(2) Program Acquisition Cost (TY\$) --	1250.2

h. (U) Unit Cost Changes.

(1) (U) PAUC --

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12. (U) Unit Cost Summary (Cont'd):

155mm SADARM Projectile

The 155mm SADARM PAUC increase is due to the loss of coproduction of submunitions from the MLRS SADARM, as well as a longer production schedule with overall lower submunition production rates.

(2) (U) AUPC --

The 155mm SADARM AUPC increase is due to the loss of coproduction of submunitions from the MLRS SADARM, as well as a longer production schedule with overall lower submunition production rates. 220,780 SADARM submunitions were planned to be procured over the period FY 97 through FY 08 as of the last report. Now, only 147,064 SADARM submunitions are planned to be procured over the period FY 95 through FY 12.

MLRS SADARM Rocket

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 91 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY89\$)	558.0	2307.5	
(2) Quantity	8	23712	
(3) Unit Cost	69.750	0.097	*****
b. (U) Procurement			
(1) Cost (BY89\$)	0.0	1730.9	
(2) Quantity	0	23712	
(3) Unit Cost	N/A	0.073	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. The current estimate reflects sunk RDT&E costs for the MLRS SADARM.

***** Actual percentage exceeds field available. It is 71575.493%.

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12. (U) Unit Cost Summary (Cont'd):

MLRS SADARM Rocket

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 91 APB)	<u>Percent</u> <u>Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	589.8	3503.9	
(2) Unit Cost	73.725	0.148	*****
d. (U) Procurement			
(1) Cost (TY\$)	0.0	2825.1	
(2) Unit Cost	N/A	0.119	N/A

e. (U) Changes from the Baseline Report - Not Applicable

f. (U) Changes from the Previous SAR (DEC 93 SAR) -

	<u>Changes in</u> <u>\$ or Qty</u>	<u>Percent</u> <u>Change</u>
(1) PAUC (BY89\$)	69.650	69650.000
(2) PAUC (BY89\$)	0.000	N/A
(3) PAUC Quantity	-23751	-99.966
(4) PAUC (TY\$)	73.578	50053.061
(5) AUPC (TY\$)	0.000	N/A

g. (U) Initial SAR

(1) Program Acquisition Cost (BY\$) --	647.2
(2) Program Acquisition Cost (TY\$) --	668.6

The MLRS SADARM has been terminated due to lack of funding.

***** Actual percentage exceeds field available. It is 49792.040.

h. (U) Unit Cost Changes.

(1) (U) PAUC --

PAUC increased due to eliminating all procurement quantities due to lack of funding.

(2) (U) AUPC --

N/A

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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	+3.9	+578.9	-	+582.8
Quantity	-	+1396.2	-	+1396.2
Schedule	+44.6	+1148.1	-	+1192.7
Engineering	-	-	-	-
Estimating	+305.0	-489.1	-	-184.1
Other	-	-	-	-
Support	-	+10.6	-	+10.6
Subtotal	+353.5	+2644.7	-	+2998.2
Current Changes:				
Economic	-1.2	-500.8	-	-502.0
Quantity	-	-1194.2	-	-1194.2
Schedule	-	-543.5	-	-543.5
Engineering	-	-	-	-
Estimating	7.3	998.7	-	+1006.0
Other	-88.2	-	-	-88.2
Support	-	6.5	-	+6.5
Subtotal	-82.1	-1233.3	-	-1315.4
Total Changes	+271.4	+1411.4	-	+1682.8
Current Estimate	944.6	2525.0	-	3469.6

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SADARM, December 31, 1994

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	+252.4	-299.0	-	-46.6
Other	-	-	-	-
Support	-	+5.7	-	+5.7
Subtotal	+286.1	+1383.0	-	+1669.1
Current Changes:				
Quantity	-	-1537.7	-	-1537.7
Schedule	-	61.6	-	+61.6
Engineering	-	-	-	-
Estimating	6.9	616.7	-	+623.6
Other	-71.7	-	-	-71.7
Support	-	5.4	-	+5.4
Subtotal	-64.8	-854.0	-	-918.8
Total Changes	+221.3	+529.0	-	+750.3
Current Estimate	875.4	1480.6	-	2356.0

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SADARM, December 31, 1994

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	+1.9	+81.3	-	+83.2
Quantity	-	+375.1	-	+375.1
Schedule	+7.9	+551.4	-	+559.3
Engineering	-	-	-	-
Estimating	+92.2	-363.8	-	-271.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+102.0	+644.0	-	+746.0
Current Changes:				
Economic	-0.4	-3.2	-	-3.6
Quantity	-	643.1	-	+643.1
Schedule	-	53.2	-	+53.2
Engineering	-	-	-	-
Estimating	7.3	873.4	-	+880.7
Other	-	-	-	-
Support	-	25.3	-	+25.3
Subtotal	+6.9	+1591.8	-	+1598.7
Total Changes	+108.9	+2235.8	-	+2344.7
Current Estimate	354.8	2525.0	-	2879.8

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13a. (U) Cost Variance Analysis (Cont'd):
155mm SADARM Projectile

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RD&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	+66.4	-197.1	-	-130.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+72.8	+348.2	-	+421.0
Current Changes:				
Quantity	-	331.9	-	+331.9
Schedule	-	22.2	-	+22.2
Engineering	-	-	-	-
Estimating	6.9	514.8	-	+521.7
Other	-	-	-	-
Support	-	15.5	-	+15.5
Subtotal	+6.9	+884.4	-	+891.3
Total Changes	+79.7	+1232.6	-	+1312.3
Current Estimate	317.4	1480.6	-	1798.0

b. (U) Previous Change Explanations --

RD&E

Economic: Revised escalation indices.

Schedule: Schedule adjusted to reduce test schedule risk and allow additional time for test-fix-test of complete tactical rounds.

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. FY93 Procurement funding was converted to RD&E to allow additional time for test-analyze-fix-test of complete tactical

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13b. (U) Cost Variance Analysis (Cont'd):

155mm SADARM Projectile
rounds.

Procurement

Economic: Revised escalation indices.
Quantity: Addition of FY95-FY02 quantities (+53,230)
Reduction in quantities by 24,368 to 39,018.
Schedule: Schedule adjustment related to amended FY90/91
President's Budget. Delay production start due to
RDT&E schedule change to allow additional time for
test-fix-test of complete tactical rounds, and
stretch to accommodate funding limitations.
Estimating: Added costs to fund Process & Reliability
Enhancement (PRE), and reduced submunition unit
costs due to PRE savings. Revised estimating
methodology. Revised estimated costs due to
Prime/Sub Acquisition Strategy and results of fixes
to EMD problems.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
Restructure EMD program as a result of starting procurement in FY 95 due to better than anticipated test results. (Estimating)	+2.1	+1.0
Reprogram prior year dollars for closed contracts resulting from audit changes of rates. (Estimating)	+0.1	+0.1
Operational Test and Evaluation Agency (OTEA) costs for conducting IOT&E, previously paid out of OTEA budget. (Estimating)	+4.5	+6.0
RDT&E Subtotal	+6.9	+6.9
(2) <u>Procurement</u>		
Correction to prior SAR to reconcile flyaway and support (Support)	+4.5	+7.0

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13c. (U) Cost Variance Analysis (Cont'd):

155mm SADARM Projectile

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Offset to correct prior SAR to reconcile flyaway and support (Estimating)	-4.5	-7.0
Revised escalation indices. (Economic)	N/A	-3.2
Total Variance associated with increase of 34514 units.	+354.1	+685.7
Quantity Variance resulting from increase of 34514 units. (Quantity)	+331.9	+643.1
Allocation to Schedule Variance resulting from quantity increase. (Schedule)	+22.2	+42.6
Change in annual procurement buy profile. (Schedule)	--	+10.6
Loss of MLRS SADARM submunition co-production (Estimating)	+519.2	+879.1
Revised estimate for Government testing and Project Management. (Estimating)	+0.1	+1.3
Data costs due to expanded schedule and quantity increase (Support)	+8.4	+13.4
Pallet costs due to increased projectile quantity (Support)	+2.6	+4.9
Procurement Subtotal	+884.4	+1591.8

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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	+2.0	+497.6	-	+499.6
Quantity	-	+1021.1	-	+1021.1
Schedule	+36.7	+596.7	-	+633.4
Engineering	-	-	-	-
Estimating	+212.8	-125.3	-	+87.5
Other	-	-	-	-
Support	-	+10.6	-	+10.6
Subtotal	+251.5	+2000.7	-	+2252.2
Current Changes:				
Economic	-0.8	-497.6	-	-498.4
Quantity	-	-1837.3	-	-1837.3
Schedule	-	-596.7	-	-596.7
Engineering	-	-	-	-
Estimating	0.0	125.3	-	+125.3
Other	-88.2	-	-	-88.2
Support	-	-18.8	-	-18.8
Subtotal	-89.0	-2825.1	-	-2914.1
Total Changes	+162.5	-824.4	-	-661.9
Current Estimate	589.8	0.0	-	589.8

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13a. (U) Cost Variance Analysis (Cont'd):
MLRS SADARM Rocket

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDTE&	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	+186.0	-101.9	-	+84.1
Other	-	-	-	-
Support	-	+5.7	-	+5.7
Subtotal	+213.3	+1034.8	-	+1248.1
Current Changes:				
Quantity	-	-1869.6	-	-1869.6
Schedule	-	39.4	-	+39.4
Engineering	-	-	-	-
Estimating	0.0	101.9	-	+101.9
Other	-71.7	-	-	-71.7
Support	-	-10.1	-	-10.1
Subtotal	-71.7	-1738.4	-	-1810.1
Total Changes	+141.6	-703.6	-	-562.0
Current Estimate	558.0	0.0	-	558.0

b. (U) Previous Change Explanations --

RDTE&

Economic: Revised escalation 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.
Conversion of FY93 Ammunition Procurement funding to RDTE& to accommodate additional time for test-analyze-fix-test.

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13b. (U) Cost Variance Analysis (Cont'd):
MLRS SADARM Rocket

Procurement

Economic: Revised escalation indices.
Quantity: Changed quantity from zero to 59,110 then to 23,712.
Schedule: Started production two years later due to RDT&E restructure and funding limitations, stretched an additional year due to funding limitations.
Estimating: Decrease in submunition unit costs, increase in rocket unit costs due to cancellation of basic MLRS rocket production after FY91.
Support: Increased data costs based on increased overhead due to cancellation of basic MLRS Rocket.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	+0.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	-1.2
Adjustment for Current & Prior Inflation. (Estimating)	-0.7	-0.7
Reprogram prior year dollars for closed contracts resulting from audit changes of rates. (Estimating)	+0.2	+0.2
Change prior year costs to actual amounts disbursed. (Estimating)	+0.5	+0.5
Termination of MLRS SADARM END due to lack of funding (Other)	-71.7	-88.2
RDT&E Subtotal	-71.7	-89.0

(2) Procurement

Revised escalation indices. (Economic)	N/A	-41.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	-456.1
Adjustment for current & prior inflation (Estimating)	+101.9	+125.3
MLRS SADARM terminated from 23,712 to 0. (Quantity)	-1869.6	-1837.3
Offset to eliminate prior schedule variances (Schedule)	+39.4	-596.7

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13c. (U) Cost Variance Analysis (Cont'd):

MLRS SADARM Rocket

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Eliminate Support due to termination (Support)	-10.1	-18.8
Procurement Subtotal	-1738.4	-2825.1

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

155mm SADARM Projectile

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.052	0.001	-0.030	0.008	--	0.008	--	--	-0.013	0.039

MLRS SADARM Rocket

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	73.725

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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$87.2	\$87.2	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$378.8	\$378.8	0	\$403.2	\$436.8

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15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-51.3	\$-14.2
Cumulative Variances To Date (11/23/94)	<u>\$-78.2</u>	<u>\$-14.2</u>
Net Change	\$-26.9	\$0.0

Explanation of Change:

The contract cost changed as a result of the reliability problems encountered in 1993. The Contractor's Estimated Price At Completion is based on the previous scope of work. The contract has not been rebaselined as of the report date. Variances reflect the differences between actuals and the old plan. It is expected that the contract will be fully definitized in June 1995.

All work on the MLRS SADARM has been discontinued. The remaining work involves repeating 155mm system testing to verify that all corrective actions were successful.

This contract applies to the 155mm SADARM and the MLRS SADARM EMD. It includes the sunk costs for the MLRS SADARM. All work on the MLRS SADARM has been discontinued in FY 94.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 35.7% (10 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 27.3% (\$946.8 / \$3469.6)

155mm SADARM Projectile

- (1) Percent Program Completed: 35.7% (10 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 12.4% (\$357.0 / \$2879.8)

MLRS SADARM Rocket

- (1) Percent Program Completed: 100.0% (9 yrs/9 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$589.8 / \$589.8)

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16b. (U) Program Funding Summary (Cont'd):

Total Program

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2013)</u>	<u>Total</u>
RDT&E	922.0	16.6	3.6	2.4	944.6
Procurement	24.8	24.3	62.4	2413.5	2525.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	946.8	40.9	66.0	2415.9	3469.6

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

155mm SADARM Projectile

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2013)</u>	<u>Total</u>
RDT&E	332.2	16.6	3.6	2.4	354.8
Procurement	24.8	24.3	62.4	2413.5	2525.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	357.0	40.9	66.0	2415.9	2879.8

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16b. (U) Program Funding Summary (Cont'd):

MLRS SADARM Rocket

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

MLRS SADARM Rocket

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	589.8	-	-	-	589.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	589.8	-	-	-	589.8

c. (U) Annual Summary -- 155mm SADARM Projectile

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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				24.2	24.0	24.0	24.0	3.0
1989				37.8	39.0	39.0	38.9	4.2
1990				48.3	51.7	51.7	51.5	4.1
1991				29.0	32.2	32.2	32.2	4.3
1992				55.3	63.0	63.0	62.9	3.0
1993				19.3	22.6	22.6	22.0	2.7

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SADARM, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
155mm SADARM Projectile

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1994				34.7	41.6	41.6	34.5	2.0
1995				33.6	41.4	17.0	0.4	2.7
1996				13.1	16.6			3.0
1997				2.7	3.6			3.0
1998				1.8	2.4			3.0
Subtot	166			317.4	354.8	307.8	283.1	

Due to commonality, the RDT&E costs for submunitions for the 155mm Projectile and MLRS Rocket have been allocated to each system based on the total quantity of submunitions to be procured for each end item.

Appropriation: 2034 Procurement of Ammunition, Army

1995	80	6.6	11.6	19.8	24.8			2.7
1996	77	3.4	14.7	18.8	24.3			3.0
1997	336	10.7	35.5	46.9	62.4			3.0
1998	714	3.1	49.2	53.0	72.6			3.0
1999	1130		57.5	58.2	82.1			3.0
2000	1325		61.2	61.9	90.0			3.0
2001	1996		59.4	60.1	90.0			3.0

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16c. (U) Program Funding Summary (Cont'd):
155mm SADARM Projectile

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escal- Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2034 Procurement of Ammunition, Army (Cont'd)

2002	3508		86.1	86.8	133.8			3.0
2003	4600		99.4	100.2	159.2			3.0
2004	6800		127.6	128.4	210.1			3.0
2005	6800		120.2	121.1	204.1			3.0
2006	6800		114.6	115.5	200.4			3.0
2007	6800		110.2	111.1	198.7			3.0
2008	6800		106.8	107.7	198.4			3.0
2009	6800		104.0	104.9	199.0			3.0
2010	6800		101.6	102.5	200.2			3.0
2011	6800		99.5	100.4	202.1			3.0
2012	5366		82.2	81.7	169.3			3.0
2013				1.6	3.5			3.0
Subtot	73532	23.8	1441.3	1480.6	2525.0			
Grand Total	73698	23.8	1441.3	1798.0	2879.8	307.8	283.1	

The current plan is to reprogram \$17.9M unobligated FY 93 Ammunition Procurement funding to the SADARM program. This will increase the total procurement quantity to 73,612 projectiles. If this is not accomplished, the additional 80 projectiles will be added to the FY 2012 procurement along with the appropriate funding.

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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	Obligat- ed	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1986				34.3	31.7	31.7	31.7	2.8
1987				60.1	57.3	57.3	57.3	2.7
1988				76.7	76.1	76.1	76.1	3.0
1989				101.9	105.2	105.2	104.8	4.2
1990				77.6	83.1	83.1	82.9	4.1
1991				68.0	75.6	75.6	75.5	4.3
1992				74.8	85.2	85.2	85.1	3.0
1993				64.3	75.2	75.2	73.0	2.7
1994				0.3	0.4	0.4	0.3	2.0
Subtot	8			558.0	589.8	589.8	586.7	
Grand Total	8			558.0	589.8	589.8	586.7	

Due to commonality, the RDT&E costs for the submunitions for the 155mm Projectile and MLRS SADARM Rocket have been allocated to each system based on the total quantity of submunitions planned to be procured for each end item.

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17. (U) Production Rate Data:

155mm SADARM Projectile

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDTE	665/665
Procurement	0/0

b. (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) Deliveries (Plan/Actual) --	<u>To Date</u>
RDTE	26/26
Procurement	0/0

b. (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 for depot storage.

c. (U) Contractor Support Costs -- None.

MLRS SADARM Rocket

a. (U) Assumptions and Ground Rules -- None

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: FMTV

AS OF DATE: December 31, 1994

INDEX

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1. Designation and Nomenclature (Preferred Name):
Family of Medium Tactical Vehicles (FMTV)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

U.S. Army, Program Executive Office, COL MICHAEL W. D. DEPARTMENT OF DEFENSE
Tactical Wheeled Vehicles Assigned: April 1, 1990
ATTN: SFAE-TWV-FMTV (COL Boudreau) AV 786-8665 COMM (313) 574-8665
Warren, MI 48397-5000

4. Program Elements/Procurement Line Items:

RDTEE:

PE 64604 Project DH07

PROCUREMENT:

APPN 2035 ICN D15500 (Army)
APPN 2035 ICN DY0010 (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 fourteen (14)

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DEPARTMENT OF DEFENSE

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6. Mission and Description (Cont'd):

body 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). Low Velocity Air Drop (LVAD) and Low Altitude Parachute Extraction Systems (LAPES) capable versions of both basic cargo and dump models are being built to support air mobile units. All models except the van will be C-130 and C-141 aircraft transportable. 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 diesel engine; an Allison automatic transmission with integral transfer case; Rockwell all-wheel drive axle; Eaton Central Tire Inflation System (CTIS) and Michelin aggressive off-road tubeless radial tires. The modified commercial Cab Over Engine (COE) tilt type three man cab is ergonomically 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 Operational 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

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7a. Program Highlights (Cont'd):

represented a procurement program of 15 years. As a result of the 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 in September 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 was 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. A revised Acquisition Program Baseline (APB) was approved by the Army Acquisition Executive on 29 January 1992. In March 1992, the FMTV program was selected by Congress as part of the "Mentor-Protege" program to develop Small and Disadvantaged Businesses as qualified subcontractors. The production facility in Sealy, TX was completed in December 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 fuel tanker, expansible van, and trailers. These models will be incorporated into the competitive FMTV rebuy solicitation scheduled for FY96. Production line start-up occurred in January 1993. Initial Production Test (IPT) and Initial Operating Test and Evaluation (IOT&E) were rescheduled which caused threshold breaches. A Program Deviation Report and a revised APB were submitted to the Army Acquisition Executive on 18 February 1993 and approved on 12 May 1993. On 25 June 1993 the FMTV Rollout ceremony was conducted at the contractor's Sealy, Texas production facility. The Mentor-Protege Agreement between Stewart & Stevenson and the Griffin Lamp Company was approved in July 1993 by the OSD Small and Disadvantaged Business Utilization Office. A quarterly exception SAR was submitted in September 1994 due to schedule slips related to delays in IPT and IOT&E testing. This also caused the ASARC IIIB to be delayed until August 1995.

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7a. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --

The Test Integration Working Group convened in October 1994 and determined the future structure of IOT&E.

The Army Acquisition Executive informed the Under Secretary of Defense (Acquisition and Technology) on 21 November 1994, of the schedule breach to the Acquisition Program Baseline (APB) dated 12 May 1993.

The FY96 President's Budget reflects funding for termination of the fifth year of the Stewart & Stevenson five year multiyear contract. A follow-on multiyear contract for the remaining Army requirement for medium tactical vehicles is expected to be recompleted in FY98.

The FMTV system is expected to satisfy mission requirements.

c. Changes Since As Of Date --

The Acquisition Program Baseline (APB) was approved on 07 March 1995 reflecting the schedule changes which breached the APB dated 12 May 1993 and were reported in the September 1994 quarterly exception SAR.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 07 March 1995. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
First Production Delivery	MAR 92	MAY 93	MAY 93(Ch-1)
Initial Production Test (IPT)			
Start	MAR 92	MAY 93	MAY 93(Ch-1)
Complete	OCT 92	JUN 95	MAY 95(Ch-2)
IOT&E			
Start	N/A	APR 95	MAR 95
Complete	N/A	JUN 95	MAY 95
Call Up 3rd Year of MYP Increment 1	N/A	SEP 93	SEP 93
ASARC IIIB	N/A	AUG 95	AUG 95
Call Up 3rd Year of MYP Increment 2	N/A	JUN 95	JUN 95(Ch-2)
First Unit Equipped (FUE)/Initial Operational Capability (IOC)-FMTV	DEC 92	DEC 95	DEC 95(Ch-2)
Call up 4th Year of MYP	N/A	JUL 95	JUL 95(Ch-2)
Call Up 5th Year of MYP	N/A	JUL 96	JUL 96(Ch-2)
Production Decision Review Van, Tanker, & Trailer	N/A	JUN 96	JUN 96
PQT, Van & Tanker			
Start	N/A	NOV 97	NOV 97
Complete	N/A	DEC 97	DEC 97
IPT, Van & Tanker			
Start	N/A	FEB 98	FEB 98
Complete	N/A	OCT 98	OCT 98
IOT&E, Van & Tanker			
Start	N/A	APR 98	APR 98
Complete	N/A	AUG 98	AUG 98
PQT, Trailer			
Start	N/A	NOV 02	APR 98 NOV 02
Complete	N/A	DEC 02	DEC 98 DEC 02
IPT Trailer			
Start	N/A	FEB 03	APR 98 FEB 03
Complete	N/A	OCT 03	DEC 98 OCT 03
IOT&E, Trailer			
Start	N/A	APR 03	AUG 98 APR 03
Complete	N/A	AUG 03	DEC 98 AUG 03

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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 were 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 Acquisition Program Baseline dated 29 January 1992 reflected these changes. Completion of PQT was originally scheduled for November 1992 but was actually completed in December 1992. The contractor was unable to complete technical data in time for scheduled production, causing first production deliveries to slip from October 1992 to May 1993. The Operational Test Readiness Review (OTRR 2) decided that IOT&E should be delayed until at least 8000 miles of IPT have been run on these vehicles. This changed IPT start and complete from November 1992 and August 1993 to May 1993 and February 1994. IOT&E start and complete were also changed from June 1993 and November 1993 to September 1993 and March 1994. This delay caused the Milestone III decision, ASARC III to be delayed from March 1994 to September 1994. Subsequent multiyear procurement call-ups and testing dates were changed accordingly. Initial production delivery was changed from May 1993 to April 1993 due to accelerated production. However, delays in receipt of parts for other models impacted the delivery and testing schedule. IOT&E was suspended by OPTEC on 16 December 1993 due to hardware deficiencies, and testing dates were revised. Revised dates were developed for all subsequent milestones. The testing milestones for trailers also changed to reflect changes in funding profile. Complete revised milestones will be established at the Milestone IIIB decision. Due to ongoing production problems which caused reliability failures, IPT Complete was changed from October 1994 to

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9b. Schedule (Cont'd):

June 1995; IOT&E Complete was changed from September 1994 to May 1995; ASARC IIIB was changed from November 1994 to August 1995; FUE/IOC changed from December 1994 to January 1996. The contract Call Ups were being negotiated with the contractor, and new dates were not determined in time for the September 1994 SAR. Call Up 3rd Year of MYP Increment 2 was changed from September to TBD; Call Up 4th Year of MYP was changed from November 1994 to TBD; Call Up 5th Year of MYP was changed from November 1995 to TBD.

c. Current Change Explanations --

(Ch-1) The First Production Delivery was previously reported as April 1993 and was actually May 1993; Initial Production Test (IPT) Start was previously reported as June 1993 and was actually May 1993.

(Ch-2) IPT Complete was scheduled for June 1995 and is now expected in May 1995; the Call Up 3rd Year of MYP Increment 2 was TBD and is now June 1995; FUE/IOC was January 1996 and is now December 1995; Call Up 4th Year of MYP was TBD and is now July 1995; Call Up 5th Year of MYP was TBD and is now July 1996.

d. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated March 1989; SDDM decision dated 7 October 1988.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 07, 1995.

10. Performance Characteristics:

a. Performance --		Approved Program		Demon- strated	Current
	DE	Objective/Threshold		Perf	Estimate
Highway Speed on 2% Grade at GVW (mph)	55	55	/ 55	54.8	55
Highway Speed on 3% Grade at GVW (mph)	45	45	/ 45	48.7	45
Highway Speed on 2% Grade at GCW (mph)	40	40	/ 40	45.5	40
Highway Speed on 3% Grade at GCW (mph)	30	35	/ 30	35.8	35
LMTV Payload (tons)	2.5	2.5	/ 2.5	2.5	2.5
MTV Payload (tons)	5	5	/ 5	5	5
LMTV Towed Load (lbs)	7500	7500	/ 7500	7500	7500
MTV Towed Load (lbs)	20000	21000	/ 21000	21000	21000

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Longitudinal Grade Operation (%)	60	60	/ 60	60	60
Slide Slope Operation (%)	30	30	/ 30	30	30
Fording Without Kit (inches)	30	30	/ 30	30	30
Fording With Kit (inches)	60	60	/ 60	60	60
Operating Range on Integral Fuel at GCW (miles)	300	300	/ 300	300	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
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

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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 fully accepted and tested, therefore some demonstrated performance values are not yet available. Values listed are based on shakedown test for MTV trucks.

b. Previous Change Explanations --

Current Estimate 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 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 Approved Acquisition Program Baseline dated March 1989; SDDM decision dated 7 October 1988.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 07, 1995.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	57.9	175.7	175.7
Procurement	6567.4	8323.9	8323.9
Rollaway	(6089.0)		(8071.9)
Other Wpn Sys Cost	(239.3)		(238.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(239.1)		(13.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	6625.3	8499.6	8499.6
Escalation	1943.3	7871.7	7871.7
Development (RDT&E)	(2.0)	(64.9)	(64.9)
Procurement	(1941.3)	(7806.8)	(7806.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	8568.6	16371.3	16371.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>118995</u>	<u>87598</u>	<u>87598</u>
Total	118995	87598	87598

Note: Excludes 147 RDTE prototypes from the SAR Baseline and 147 from the Current Estimate that are not considered fully configured.

Current Estimate quantity (and unit of measure) is for trucks. Cost also includes trailers. The FMTV LRIP was approved in June 1991 for not to exceed 200 vehicles per month until MSIIIB (August 1995).

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated March 1989; SDDM decision dated 7 October 1988.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 07, 1995.

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FMTV, December 31, 1994

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY89\$)	8499.6	8499.6	
(2) Quantity	87598	87598	
(3) Unit Cost	0.097	0.097	0.000
b. Procurement			
(1) Cost (BY89\$)	8323.9	8323.9	
(2) Quantity	87598	87598	
(3) Unit Cost	0.095	0.095	0.000

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FMTV, December 31, 1994

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	-2.3	+176.6	-	+174.3
Quantity	+141.1	+637.8	-	+778.9
Schedule	-11.2	+1740.9	-	+1729.7
Engineering	-	-	-	-
Estimating	+51.2	+4763.0	-	+4814.2
Other	-	-	-	-
Support	-	-190.4	-	-190.4
Subtotal	+178.8	+7127.9	-	+7306.7
Current Changes:				
Economic	-0.7	-223.7	-	-224.4
Quantity	-	-	-	-
Schedule	2.5	667.4	-	+669.9
Engineering	-	-	-	-
Estimating	0.1	3.9	-	+4.0
Other	-	-	-	-
Support	-	46.5	-	+46.5
Subtotal	+1.9	+494.1	-	+496.0
Total Changes	+180.7	+7622.0	-	+7802.7
Current Estimate	240.6	16130.7	-	16371.3

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FMTV, December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	57.9	6567.4	0.0	6625.3
Previous Changes:				
Quantity	+83.6	-70.8	-	+12.8
Schedule	-	-321.7	-	-321.7
Engineering	-	-	-	-
Estimating	+34.2	+2372.3	-	+2406.5
Other	-	-	-	-
Support	-	-250.3	-	-250.3
Subtotal	+117.8	+1729.5	-	+1847.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	3.1	-	+3.1
Other	-	-	-	-
Support	-	23.9	-	+23.9
Subtotal	-	+27.0	-	+27.0
Total Changes	+117.8	+1756.5	-	+1874.3
Current Estimate	175.7	8323.9	-	8499.6

b. Previous Change Explanations --

RD&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; shift of funding from FY98 & FY99 to FY00 & FY01 to align with President's Budget caused shortfall to optimum schedule. Correction to the Dec 92 SAR from schedule to estimating.
 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,

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13b. Cost Variance Analysis (Cont'd):

vans and trailers. Revised estimate for FY00 and FY01.

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. MTV trucks were reduced from 57447 to 41147 and LMTV trucks were increased from 44603 to 46451.

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; change in procurement buy profile for MTV and LMTV trucks and LMTV trailers.

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; adjustment for changes in model mix.

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; adjustments in TPF/FDT due to revised fielding plan; change in variants requiring FRET; added OCONUS/CONUS tech support and NET; current & prior year inflation offset; reduced initial spares, other weapon system costs and PM salaries due to qty reduction and model mix change.

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FMTV, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised escalation indices (Economic)	N/A	-0.7
Adjustment for current & prior inflation (Estimating)	--	+0.1
Change in procurement buy schedule caused delay in associated RD&E costs (Schedule)	--	+2.5
	<hr/>	<hr/>
RD&E Subtotal	--	+1.9

(2) Procurement

Revised escalation indices (Economic)	N/A	-223.7
Adjustment for current & prior inflation (Estimating)	+3.1	+3.9
Change in LMTV procurement buy profile due to testing delay (Schedule)	--	+401.9
Change in MTV procurement buy profile due to testing delay (Schedule)	--	+264.1
Change in LMTV trailer procurement buy profile due to testing delay (Schedule)	--	+1.0
Change in MTV trailer procurement buy profile due to testing delay (Schedule)	--	+0.4
Adjustment for current & prior inflation (Support)	+0.2	+0.2
Increase of initial spares cost due to schedule delay (Support)	--	+1.9
Increase of Other Weapon System Cost (potential cancellation fee provision in the contract) (Support)	+23.7	+30.2
Increase of PM salaries due to testing delay (Support)	--	+3.4
Increase of Package Fielding due to testing delay (Support)	--	+10.8
	<hr/>	<hr/>
Procurement Subtotal	+27.0	+494.1

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.072	-0.001	0.036	0.027	--	0.055	--	-0.002	0.115	0.187

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

FMTV:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Stewart & Stevenson Serv., Houston, TX			
DAAE07-92-C-R001, FFP/EPA	\$1196.2	N/A	10843
Award: October 11, 1991			
Definitized: October 11, 1991			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1196.2	N/A	10843	\$1196.2	\$1196.2

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: 23.5% (8 yrs/34 yrs)
- (2) Percent Program Cost Appropriated: 6.3% (\$1024.5 / \$16371.3)

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FMTV, December 31, 1994

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY88-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2021)</u>	<u>Total</u>
RDT&E	91.6	-	-	149.0	240.6
Procurement	932.9	40.8	-	15157.0	16130.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1024.5	40.8	-	15306.0	16371.3

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Encl 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	26.9	25.3	4.2
1990				18.0	19.2	19.2	19.1	4.1
1991				9.5	10.6	10.5	5.3	4.3
1992				9.5	10.9	10.9	8.0	3.0
1993				0.6	0.7	0.7	0.7	2.7
1994				5.8	6.9	6.6	4.4	2.0
1995				5.3	6.5	1.8		2.7
1996								3.0

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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								3.0
1998								3.0
1999								3.0
2000								3.0
2001				1.2	1.7			3.0
2002				59.9	91.0			3.0
2003								3.0
2004								3.0
2005								3.0
2006								3.0
2007								3.0
2008								3.0
2009				15.1	28.2			3.0
2010				14.6	28.1			3.0
Subtot				175.7	240.6	86.4	72.6	

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FMTV, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army

1991	394	15.6	40.8	68.6	78.6	78.6	52.7	4.3
1992	1305	7.3	125.7	153.3	180.1	179.9	120.7	3.0
1993	1991	9.7	203.9	215.1	259.2	186.8	108.1	2.7
1994	219	1.5	21.2	23.5	29.0	2.2	1.6	2.0
1995	3461	1.8	294.1	302.5	386.0	1.5		2.7
1996				31.4	40.8			3.0
1997								3.0
1998	100	0.2	10.0	10.4	14.3			3.0
1999	854	19.1	86.8	110.9	157.7			3.0
2000	1837	2.0	198.1	205.6	301.1			3.0
2001	2204	1.9	232.1	242.4	365.6			3.0
2002	3029	9.6	267.8	287.0	445.9			3.0
2003	4241	15.3	375.1	394.1	630.6			3.0
2004	4241	1.7	376.8	390.0	642.7			3.0
2005	4241	1.7	377.0	386.0	655.2			3.0
2006	4241	1.7	372.4	385.4	673.9			3.0
2007	3029	9.6	268.3	286.1	515.2			3.0
2008	4241	15.3	375.8	392.2	727.5			3.0

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FMTV, December 31, 1994

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 (Cont'd)

2009	4241	1.7	377.0	390.1	745.3			3.0
2010	4241	1.7	378.4	384.1	755.8			3.0
2011	4241	1.7	373.9	386.3	783.0			3.0
2012	3029	9.6	269.4	287.6	600.5			3.0
2013	4241	15.3	376.3	393.2	845.5			3.0
2014	4241	1.7	378.9	392.6	869.5			3.0
2015	4241	1.7	379.1	386.2	881.1			3.0
2016	4241	1.7	374.5	387.7	911.0			3.0
2017	3029	9.6	261.7	288.8	699.0			3.0
2018	4075	15.3	362.0	379.0	944.8			3.0
2019	4075	1.7	365.0	378.7	972.5			3.0
2020	4075	5.7	365.3	374.0	989.1			3.0
2021				11.1	30.2			3.0
Subtot	87598	181.4	7887.4	8323.9	16130.7	449.0	283.1	
Grand Total	87598	181.4	7887.4	8499.6	16371.3	535.4	355.7	

Expenditures and obligations are as of January 31, 1995.

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FMTV, December 31, 1994

17. Production Rate Data:

a. Deliveries (Plan/Actual) --		<u>To Date</u>
	RDT&E	60/60
	Procurement	3074/0

Vehicles produced to date will be accepted following completion of final government testing.

b. 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 the costs in section 18 b.

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per LMTV	Ave Annual Cost Per MTV
Personnel	3.9	6.9
O&S Consumables	3.2	7.7
Direct Depot Maint	0.0	0.1
Sustaining Investment	0.1	0.1
Other Direct Costs	0.0	0.1
Indirect Costs	1.5	2.9
Total	8.7	17.8

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FMTV, December 31, 1994

18b. Operating and Support Costs (Cont'd):

18b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost LMTV Trailer	Avg Annual Cost MTV Trailer
Personnel	1.10	1.23
O&S Consumables	0.18	0.37
Direct Depot Maint	0.00	0.00
Sustaining Investment	0.01	0.01
Other Direct Costs	0.00	0.00
Indirect Costs	0.34	0.38
Total	1.63	1.99

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Other	0.5	---	---	---	0.5
Total	0.5	---	---	---	0.5

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A-23 PLS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: PLS (FHTV)

AS OF DATE: December 31, 1994

<u>SUBJECT</u>	<u>INDEX</u>	<u>PAGE</u>
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Production Rate Data		17
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1. Designation and Nomenclature (Preferred Name):

Palletized Load System (PLS)/Family of Heavy Tactical Vehicles (FHTV)

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FOR OPEN PUBLICATION

2. DoD Component: Army

Joint Participants:
None

MAR 21 1995 3

3. Responsible Office and Telephone Number:

U.S. Army, Program Executive COL James A. Wank
Office, Tactical Wheeled Vehicles Assigned: July 15, 1994
ATTN: SFAE-TWV-PLS (COL Wank) AV 786-5800 COMM (810) 574-5800
Warren, MI 48397-5000

DIRECTOR OF CENTRAL COMMAND INFORMATION
AND SECURITY POLICY
OFFICE OF THE SECRETARY OF DEFENSE

4. Program Elements/Procurement Line Items:

RDT&E:

PE 64622 Project D659

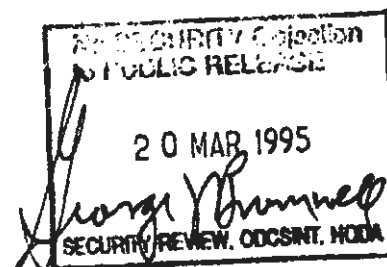
PROCUREMENT:

APPN 2035 ICN D16500 (Army)
APPN 2035 ICN DY0020 (Army)
APPN 2035 ICN DV0410 (Army)
APPN 2035 ICN DV0420 (Army)

5. Related Programs: None.

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PLS (FHTV), December 31, 1994

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 USA, 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, France, and Germany to ensure interoperability of PLS flatracks with their comparable systems. Technical data has been exchanged between the parties to define the necessary interfaces. The British flatrack was successfully tested on the U.S. PLS during the prototype phase. The German and French flatracks will be evaluated when 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 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

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PLS (FHTV), December 31, 1994

7a. Program Highlights (Cont'd):

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 (APB) 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. 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-Low Rate Initial Production (LRIP) Report to Congress. The Production Acquisition Program Baseline (APB) for PLS was approved on 28 December 1992.

The Beyond-Low Rate Initial Production (LRIP) Report was sent to Congress on 30 April 1993, allowing award of the 4th Program Year call-up on 30 April 1993. The PLS Enhanced Flatrack completed and passed Conventional Systems Committee (CSC) certification in October 1993. On 3 November 1993 the Army Acquisition Executive approved Type Classification-Standard for the PLS. On 11 December 1993, final transportability testing was completed by successfully passing the C-141 aircraft loading.

The PLS is expected to satisfy mission requirements.

b. Significant Developments Since Last Report --

Full AR 700-34 release was approved by the Commander, Army Materiel Command (AMC) on 31 January 1994. First Unit Equipped (Ft. Hood, TX) was also accomplished on 9 February 1994 and Initial Operating Capability was achieved on 11 Feb 1994.

The award of the production of 5000 Enhanced Flatracks was made in September to Oshkosh Truck Corp. Total flatrack production, both standard and enhanced, now exceeds 15,000 units.

A total of 882 trucks, 487 trailers, and 4644 flatracks have been fielded through 31 Dec 94, with fieldings completed at Ft. Hood, Ft. Bliss, Ft. Stewart, Ft. Carson, and other FORSCOM installations, as well as Korea.

c. Changes Since As Of Date --

As of 31 Jan 95, 970 PLS trucks, 514 trailers, and 5345 flatracks have been issued to units in the field. This represents approximately

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PLS (FHTV), December 31, 1994

7c. Program Highlights (Cont'd):

30% of the total planned fieldings for PLS. Fieldings have been completed to Ft. Jackson, Kuwait, Ft. Drum (FORSCOM units), Ft. Bragg, and Korea. Germany, Ft. Campbell, and Ft. Irwin fieldings are in process.

8. Threshold Breaches:

There are no breaches to the Approved Acquisition Program Baseline (APB) dated 28 December 1992 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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	JAN 90	JAN 90	SEP 89
Complete	SEP 89	SEP 89	SEP 89
Early User Test and Experimentation			
Testing			
Start	JAN 90	JAN 90	JAN 90
Complete	MAR 90	MAR 90	MAR 90
Milestone IIIA (DAB)	SEP 90	SEP 90	SEP 90
Production Award	SEP 90	SEP 90	SEP 90
Pre-Shakedown Test			
Start	JAN 91	JAN 91	JAN 91
Complete	MAR 91	MAR 91	MAR 91
Shakedown Test			
Start	JUL 91	JUL 91	JUL 91
Complete	DEC 91	DEC 91	DEC 91
First Production Delivery	JAN 92	JAN 92	JAN 92
Initial Production Test			
Start	JAN 92	JAN 92	JAN 92
Complete	OCT 92	OCT 92	OCT 92
IOT&E			
Start	MAY 92	MAY 92	MAY 92
Complete	AUG 92	AUG 92	AUG 92
Milestone IIIB (ASARC)	NOV 92	NOV 92	DEC 92

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PLS (FHTV), December 31, 1994

9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
First Unit Equipped (FUE)	AUG 93	AUG 93	FEB 94
Initial Operating Capability (IOC)	SEP 93	SEP 93	FEB 94 (Ch-1)

b. Previous Change Explanations --

Shakedown Test was delayed and expanded, which also caused changes to subsequent milestones. The FSD Development Testing was reduced to a three week test ending in September 1989. Schedule changes for IOT&E, Milestone IIIB and FUE/IOC reflected the Milestone III Decision APB dated 28 December 1992.

Schedule changes for completion of transportability testing and the subsequent materiel release process caused the First Unit Equipped (FUE) date to change from August 1993 to February 1994 and Initial Operating Capability (IOC) to change from September 1993 to March 1994.

c. Current Change Explanations --

(Ch-1) The IOC changed from Mar 94 to Feb 94 and was achieved at Ft. Hood, TX on 11 Feb 94.

d. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Highway Speed on 2% Grade at GVW (mph)	50	50 / 45	50	50
Highway Speed on 2% Grade at GCW (mph)	35	35 / 30	38	38
PLS Truck/Trailer Load (tons)	16.5	16.5 / 16.5	16.5	16.5
Longitudinal Grade Operation (%)	30	30 / 30	30	30

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PLS (FHTV), December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Side Slope Operation (\$)	30	30 / 30	30	30
Fording Capability (inches)	48	48 / 30	48	48
Operating Range on Integral Fuel at GCW (miles)	225	225 / 225	266	266
RELIABILITY				
Truck				
MMBHMF (miles)	2250	2250 / 2250	3734	3734
MMBOMF (miles)	1500	1500 / 1500	2703	2703
Trailer				
MMBHMF (miles)	2280	2280 / 2280	11998	11998
MMBOMF (miles)	1900	1900 / 1900	6857	6857
MHC				
MHBHMF (hours)	195	195 / 195	432	432
MHBOMF (hours)	150	150 / 150	384	384
MAINTENANCE RATIO				
TRUCK				
MMHPOM (Operational)	0.015	0.015 / 0.015	0.013	0.013
MMHPOM (Technical)	0.013	0.013 / 0.013	0.013	0.013
Trailer				
MMHPOM (Operational)	0.005	0.005 / 0.005	0.002	0.002
MMHPOM (Technical)	0.004	0.004 / 0.004	0.002	0.002
MHC				
MMHPOH (Operational)	0.100	0.100 / 0.100	0.059	0.059
MMHPOH (Technical)	0.083	0.083 / 0.083	0.059	0.059
TRANSPORTABILITY				
Surface Transportation (Highway, Ship & Rail)	(H,S&R)	(H,S&R) / (H,S&R)	(H,S&R)	(H,S&R)
Air Transportation	C-141	C-141 / C-141	C-141	C-141
MOBILITY (Vehicle Cone Index)				
Truck with MHC	36	36 / 39	33	33
Truck without MHC	34	34 / 37	33	33
Truck & Trailer Combination	50	50 / 50	39	39

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

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10a. Performance Characteristics (Cont'd):

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 --

Initial changes to the performance data (Fording Capability, Reliability for MHC, Mobility for truck with MHC and truck without MHC) result from the Milestone IIIB Decision on 28 December 1992.

All other changes to the performance data are due to final IOT&E test scoring results. All Current Estimates reflect the improvements shown in final Demonstrated Performance. Highway speed on 2% grade at GVW was 50/45 and is now 50; highway speed on 2% grade at GCW was 35/30 and improved to 38; operating range improved from 225 miles to 266 miles. Reliability for trucks (MMBHMF) was 2250 and improved to 3734; trucks (MMBOMF) was 1500 and improved to 2703; trailers (MMBHMF) was 2280 and improved to 11998; trailers (MMBOMF) was 1900 and improved to 6857; MHC (MMBHMF) was 195 and improved to 432; MHC (MMBOMF) was 150 and improved to 384. The Maintenance ratio for trucks (operational) was 0.015 and improved to 0.013; trailers (operational) was 0.005 and improved to 0.002; trailers (technical) was 0.004 and improved to 0.002; MHC (operational) was 0.100 and improved to 0.059; MHC (technical) was 0.083 and improved to 0.059; Mobility for truck with MHC was 36 and improved to 33; truck without MHC was 34 and improved to 33; truck & trailer combination was 50 and improved to 39.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	44.0	44.0	46.3
Procurement	1521.7	1521.7	1014.6
Recurring Production	(1463.3)		(973.2)
Non-recurring Production	(28.8)		(26.6)
Total Rollaway	(1492.1)		(999.8)
Other Wpn Sys Cost	(28.8)		(14.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.8)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 93 Base-Year \$	1565.7	1565.7	1060.9
Escalation	129.6	129.6	51.5
Development (RDT&E)	(-4.5)	(-4.5)	(-4.1)
Procurement	(134.1)	(134.1)	(55.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1695.3	1695.3	1112.4
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>3386</u>	<u>3386</u>	<u>2678</u>
Total	3386	3386	2678

Note: Excludes 27 RDTE prototypes from the SAR Baseline and 27 from the Current Estimate that are not considered fully configured.

The LRIP was approved in September 1990 for 504 trucks and was based on production not to exceed 30 per month prior to IOT&E approval.

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, Germany, and France to ensure interoperability of PLS flatracks with their comparable systems.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

AAE Approved Acquisition Program Baseline Dated December 28, 1992.

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11e. Total Program Cost and Quantity (Cont'd):

Approved Program:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 92 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY93\$)	1060.9	1565.7	
(2) Quantity	2678	3386	
(3) Unit Cost	0.396	0.462	-14.327
b. Procurement			
(1) Cost (BY93\$)	1014.6	1521.7	
(2) Quantity	2678	3386	
(3) Unit Cost	0.379	0.449	-15.697

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	39.5	1655.8	0.0	1695.3
Previous Changes:				
Economic	-	-27.2	-	-27.2
Quantity	-	-674.6	-	-674.6
Schedule	-	-0.2	-	-0.2
Engineering	+2.0	-	-	+2.0
Estimating	+0.5	+65.7	-	+66.2
Other	-	-	-	-
Support	-	-19.3	-	-19.3
Subtotal	+2.5	-655.6	-	-653.1
Current Changes:				
Economic	0.1	2.2	-	+2.3
Quantity	-	119.4	-	+119.4
Schedule	-	-1.0	-	-1.0
Engineering	0.4	-101.7	-	-101.3
Estimating	-0.3	52.6	-	+52.3
Other	-	-	-	-
Support	-	-1.5	-	-1.5
Subtotal	+0.2	+70.0	-	+70.2
Total Changes	+2.7	-585.6	-	-582.9
Current Estimate	42.2	1070.2	-	1112.4

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	44.0	1521.7	0.0	1565.7
Previous Changes:				
Quantity	-	-602.2	-	-602.2
Schedule	-	-	-	-
Engineering	+1.9	-	-	+1.9
Estimating	+0.4	+44.7	-	+45.1
Other	-	-	-	-
Support	-	-12.9	-	-12.9
Subtotal	+2.3	-570.4	-	-568.1
Current Changes:				
Quantity	-	105.5	-	+105.5
Schedule	-	-	-	-
Engineering	0.4	-87.0	-	-86.6
Estimating	-0.4	46.7	-	+46.3
Other	-	-	-	-
Support	-	-1.9	-	-1.9
Subtotal	-	+63.3	-	+63.3
Total Changes	+2.3	-507.1	-	-504.8
Current Estimate	46.3	1014.6	-	1060.9

b. Previous Change Explanations --

RDT&E

Engineering: Fabricate/test engineering equipment for Heavy Repair Vehicle and flatrack.

Estimating: Funding for FMTV testing.

Procurement

Economic: Revised escalation indices.

Quantity: Reduced trucks from 3386 to 2691, trailers from 1645 to 1311 and flatracks from 46461 to 13874.

Estimating: Revised estimate for Enhanced Flatracks quantity change. Revised estimate for ECOs.

Support: Revised test requirements.

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13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for current and prior inflation. (Estimating)	-0.1	-0.1
Change in Program Management Support. (Estimating)	-0.3	-0.2
Increase to Enhanced Flatrack engineering effort. (Engineering)	+0.4	+0.4
RD&E Subtotal	--	+0.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.5
Economic Adjustment for negative program change. (Economic)	N/A	+6.7
Adjustment for Current and Prior Inflation. (Estimating)	+4.2	+4.7
Reduction of 13 trucks from 2691 to 2678 due to change in program requirements. (Quantity)	-2.4	-2.5
Increase of 100 trailers from 1311 to 1411 due to a change in program requirements. (Quantity)	+2.9	+3.1
Increase of 10871 flatracks from 13874 to 24745 due to change in program requirements. (Quantity)	+105.0	+118.8
Allocation to estimating variance resulting from quantity change. (Estimating)	+42.5	+47.9
Change in annual procurement buy profile related to trailers for FY90-95. (Schedule)	--	-0.5
Change in annual procurement buy profile related to flatracks for FY90-97. (Schedule)	--	-0.5
Change in the design configuration of the Container Handling Device. (Engineering)	+7.6	+8.8
Reduction in flatracks cost due to revised performance requirements and changed model mix. (Engineering)	-94.6	-110.5

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised initial spares requirements. (Support)	-2.0	-1.9
Revised Other Weapons Systems costs (New Equipment Training (NET), First Destination Transportation (FDT), and Total Package Fielding (TPF)) due to changed flatracks schedule. (Support)	-0.2	+0.1
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Procurement Subtotal	+63.3	+70.0

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.461	0.035	-0.069	0.014	0.066	0.032	--	-0.038	0.040	0.501

b. Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.501	-0.009	-0.076	--	-0.037	0.044	--	-0.008	-0.086	0.415

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement -- <u>Production PLS (FHTV):</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
OSHKOSH TRUCK CORPORATION, OSHKOSH, WI			
DAAE07-90-C-R035, FFP-EPA	\$859.6	N/A	14706
Award: September 28, 1990			
Definitized: September 28, 1990			

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15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$904.5	N/A	19137	\$904.5	\$904.5

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: 66.7% (8 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 92.6% (\$1030.1 / \$1112.4)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY88-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-99)	<u>Total</u>
RDT&E	42.2	-	-	-	42.2
Procurement	987.9	0.6	80.6	1.1	1070.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1030.1	0.6	80.6	1.1	1112.4

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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	Obligated	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	28.2	28.2	4.2
1990				3.3	3.1	3.1	3.1	4.1
1991								4.3
1992				2.2	2.2	2.2	2.2	3.0
1993				1.8	1.8	1.8	1.6	2.7
1994				1.9	2.0	0.5	0.1	2.0
Subtot				46.3	42.2	40.7	40.1	

Appropriation: 2035 Other Procurement, Army

1990	81	10.5	29.2	40.1	38.8	38.3	35.7	4.1
1991	423	1.7	127.3	129.0	128.6	127.9	127.9	4.3
1992	281	0.8	92.0	93.2	95.2	95.1	95.1	3.0
1993	961	2.5	287.0	291.9	306.3	301.3	279.7	2.7
1994	932	2.9	365.3	375.2	402.7	357.1	35.3	2.0
1995		4.8	6.8	14.7	16.3	7.9	0.1	2.7
1996		0.5		0.5	0.6			3.0

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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)

1997		2.0	65.6	69.1	80.6			3.0
1998		0.5		0.5	0.6			3.0
1999		0.4		0.4	0.5			3.0
Subtot	2678	26.6	973.2	1014.6	1070.2	927.6	573.8	
Grand Total	2678	26.6	973.2	1060.9	1112.4	968.3	613.9	

Expenditures and obligations are as of 28 February 1995.

The Fiscal Year 1995 which shows recurring flyaway costs and no quantity reflects trailer procurement only. FY97 reflects flatrack procurement. Actual procured and affordable quantities for trucks, trailers and flatracks are:

	Trucks	Trailers	Flatracks
1990	81	126	339
1991	423	124	1776
1992	281	324	1181
1993	961	224	4839
1994	932	442	9910
1995		171	
1996			
1997			6700
Total	2678	1411	24745

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17. Production Rate Data:

a. Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	27/27
Procurement	1883/1883

RDT&E deliveries to date represent trucks only. There were also RDT&E units of 18 trailers and 90 flatracks planned and delivered. Procurement deliveries are as of 31 December 1994.

b. 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 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	Avg Annual Cost Per Trailer
Personnel	36.2	1.0
O&S Consumables	7.8	0.6
Direct Depot Maint	0.0	0.0
Sustaining Investment	0.2	0.0
Other Direct Costs	0.3	0.0
Indirect Costs	3.9	0.1
Total	48.4	1.7

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18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- None.

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 1507 ICN 223000 (Navy)

APPN 3020 ICN 1234 (Air Force)

MILCON:

PE 1205NCN (Shared)

5. (U) Related Programs:

F/A-18 aircraft and Tactical Aircraft Mission Planning System (TAMPS).

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 Navy will integrate the JSOW onto the F/A-18 and AV-8B aircraft, and the Air Force will integrate the JSOW onto the F-16 C/D and B-1B 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, yet tactically significant targets which must be attacked in any conflict.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

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 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). A contract was awarded to Texas Instruments for the Baseline JSOW E&MD effort (June 1992). The JSOW program held the Preliminary Design Review (PDR) January 25, 1993. The Design Review Board (DRB) found adequate technical progress had been made with a limited number of exceptions. The PDR was completed on April 26, 1993. The EMD contract Subsequent Application Review (SAR) at

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7a. (U) Program Highlights (Cont'd):

Texas Instruments (TI) was successfully completed on September 24, 1993. On November 19, 1993, the JSOW AGM-154A commenced Airworthiness testing with a successful first flutter flight test. The initial captive carriage testing was performed at Patuxent River, MD with a F/A-18 loadout which included four (4) JSOW Structural Test Vehicles (STV-C1 through C3 and STV-D).

b. (U) Significant Developments Since Last Report --
On October 28, 1994, OSD Program Decision Memorandum Number Two (PDM #2) directed the USAF to plan on inventory quantities of 3,000 JSOW Baseline and 3,000 JSOW BLU-108 weapons. The JSOW continued to perform the test program requirements with the F/A-18 aircraft on, or above expectation. In December 1994, the JSOW successfully completed the final DT-IIA Airworthiness Jettison test and accomplished a major program milestone with the STV-F first weapon free flight.

The JSOW system will satisfy mission requirements.

c. (U) Changes Since As Of Date --
On 12 January 1995, the JSOW program briefed the Joint Requirements Oversight Council (JROC) on the program status of the Baseline, Unitary Variant, and the BLU-108 programs. In addition, the requirements and key performance parameters were validated.

8. (U) Threshold Breaches:

There is an 18.4% breach to the total procurement (BY\$) cost as currently approved in the Acquisition Program Baseline dated 23 June 1992. This breach is a result of adding 3,000 JSOW Baseline units to this program. There are no Nunn McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Critical Design Review	DEC 94	DEC 94	APR 95

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
IOT&E (OT-IIA)			
Start	DEC 95	DEC 95	JAN 96 (Ch-1)
Complete (Report)	JUL 96	JUL 96	NOV 96 (Ch-1)
TECHEVAL (DT-IIC)			
Start	NOV 95	NOV 95	JAN 96 (Ch-1)
Complete (Report)	JUL 96	JUL 96	NOV 96 (Ch-1)
Functional Configuration Audit	OCT 95	OCT 95	DEC 95
Production Verification Review	APR 96	APR 96	JUN 96
Production Readiness Review	JUN 96	JUN 96	AUG 96
LRIP Contract Option Exercised	OCT 96	OCT 96	DEC 96
LRIP First Delivery	MAY 98	MAY 98	JUL 98
OPEVAL (OT-IIB)			
Start	AUG 96	AUG 96	OCT 96
Complete (Report)	JUL 97	JUL 97	SEP 97
Organizational Level Support	APR 00	APR 00	JUN 00
Intermediate Level Support	JUL 00	JUL 00	SEP 00
Milestone III	III 98	III 98	OCT 98

(b)(1)

b. (U) Previous Change Explanations --

(MSII & E&MD Contract Award) Program experienced a 3 month slip due to administrative delays in reaching a MS II DAB.

(PDR, FCA, PVR, PRR, LRIP option & first delivery, OPEVAL start & complete, O & I level support) 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.

(IOT&E OTIIA & TECHEVAL DTIIC) 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.

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(CDR) A four month schedule delay adjustment (from Dec 94 to Apr 95) due to a combination of the month delay based on the PDR, and an additional two month delay due to the ADA software requirement being incorporated into the E&MD contract.

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9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

(Ch-1) (IOT&E OT-IIA & TECHEVAL DTIIC) A three month schedule delay in commencing (from Oct 95 to Jan 96) and completion of reports (from Aug 96 to Nov 96) due to delay in DT-IIB testing resulting from software.

(b)(1)

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 June 23, 1992.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

(b)(1)



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10a. (U) Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved</u>	<u>Demon-</u>	<u>Current</u>
		<u>Program</u>	<u>strated</u>	<u>Estimate</u>
		<u>Objective/Threshold</u>	<u>Perf</u>	
(b)(1)				

b. (U) Previous Change Explanations --

(Aircraft Compatibility Weight) Increase based upon PDR data and is within limits of mission requirements.

c. (U) Current Change Explanations --

(Ch-1) Revised estimate for aircraft compatibility based on TI technical performance.

d. (U) References --

(U) Development Estimate:

Defense Acquisition 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 June 23, 1992.

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11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	328.3	328.3	368.8
Procurement	1535.7	1535.7	1818.5
Recurring	(1320.2)		(1598.0)
Non-Recurring	(79.6)		(125.8)
Total Flyaway	(1399.8)		(1723.8)
Fleet Support	(92.4)		(66.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.5)		(28.7)
Construction (MILCON)	21.8	21.8	11.9
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	1885.8	1885.8	2199.2
Escalation	1083.4	1083.4	1144.5
Development (RDT&E)	(44.5)	(44.5)	(49.1)
Procurement	(1032.1)	(1032.1)	(1091.2)
Construction (MILCON)	(6.8)	(6.8)	(4.2)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2969.2	2969.2	3343.7
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>8800</u>	<u>8800</u>	<u>11800</u>
Total	8800	8800	11800

Excludes 102 RDT&E units which 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:

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 June 23, 1992.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 92 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	2199.2	1885.8	
(2) Quantity	11800	8800	
(3) Unit Cost	0.186	0.214	-13.030
b. (U) Procurement			
(1) Cost (BY90\$)	1818.5	1535.7	
(2) Quantity	11800	8800	
(3) Unit Cost	0.154	0.175	-11.690

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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	372.8	2567.8	28.6	2969.2
Previous Changes:				
Economic	-2.6	-94.6	-0.5	-97.7
Quantity	-	-	-	-
Schedule	-	+40.2	-	+40.2
Engineering	-	-	-	-
Estimating	+43.3	-136.3	-12.7	-105.7
Other	-	-	-	-
Support	-	+72.0	-	+72.0
Subtotal	+40.7	-118.7	-13.2	-91.2
Current Changes:				
Economic	-1.6	-1.3	-	-2.9
Quantity	-	678.0	-	+678.0
Schedule	-	-62.6	0.4	-62.2
Engineering	-	-	-	-
Estimating	6.0	-1.9	0.3	+4.4
Other	-	-	-	-
Support	-	-151.6	-	-151.6
Subtotal	+4.4	+460.6	+0.7	+465.7
Total Changes	+45.1	+341.9	-12.5	+374.5
Current Estimate	417.9	2909.7	16.1	3343.7

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	328.3	1535.7	21.8	1885.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+34.7	-93.9	-10.1	-69.3
Other	-	-	-	-
Support	-	+37.6	-	+37.6
Subtotal	+34.7	-56.3	-10.1	-31.7
Current Changes:				
Quantity	-	408.5	-	+408.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	5.8	9.4	0.2	+15.4
Other	-	-	-	-
Support	-	-78.8	-	-78.8
Subtotal	+5.8	+339.1	+0.2	+345.1
Total Changes	+40.5	+282.8	-9.9	+313.4
Current Estimate	368.8	1818.5	11.9	2199.2

b. (U) Previous Change Explanations --

RD&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. Engineering support efforts rephased due to budgetary reductions in early stage of program. Adjustments for contract FPRA rates, and field technical and testing support.

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13b. (U) Cost Variance Analysis (Cont'd):

Adjustment for current and prior inflation.

Procurement

Economic: Revised escalation indices.
Economic adjustment for negative program change.
Schedule: Delivery schedule slip.
Estimating: Refinement of prior estimate.
Decrease telemetry quantity and system unit price
for addition of JSOW BLU-108.
Support: Attributable to hardware delivery schedule.
Decrease estimate for initial spares. Increase
requirements for Fleet support.

MILCON

Economic: Revised escalation indices.
Economic adjustment for negative program change.
Estimating: Deletion of AUR maintenance/test facility
requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-1.6
Adjustment for Current & Prior Inflation. (Estimating)	+0.9	+1.1
Increase in estimate for contract overhead adjustments and to realignment for annual funding increments. (Estimating)	+4.9	+4.9
RD&E Subtotal	+5.8	+4.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-17.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+16.5
Total Variance associated with increase from 8,800 to 11,800 for the Air Force.	+426.5	+703.5

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity Variance resulting from addition of 3,000 Air Force units. (Quantity)	+408.5	+678.0
Addition of nonrecurring costs for the 3,000 Air Force units. (Estimating)	+18.5	+30.4
Estimating Allocation due to Quantity increase. (Estimating)	-33.3	-58.4
Addition of Initial Spares and Other Weapon System Support for Air Force. (Support)	+32.8	+53.5
Decreased costs for annual procurement buy acceleration. (Schedule)	--	-62.6
Increase in nonrecurring costs for additional All-Up-Round (AUR) containers. (Estimating)	+24.2	+26.1
Decreased support requirements resulting from schedule acceleration and refinement of estimates. (Support)	-111.6	-205.1
Procurement Subtotal	+339.1	+460.6
(3) <u>MILCON</u>		
Delay of MILCON FY-98 to FY-99. (Schedule)	--	+0.4
Refined estimate for MILCON projects. (Estimating)	+0.2	+0.3
MILCON Subtotal	+0.2	+0.7

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.337	-0.009	-0.027	-0.002	--	-0.009	--	-0.007	-0.054	0.283

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --
 (U) JSOW E&MD:
 TEXAS INSTRUMENTS, Dallas, TX
 N00019-91-C-0196, CPIO
 Award: June 26, 1992
 Definitized: June 26, 1992

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$203.2	\$0.0	0	\$226.7	\$237.0
Previous Cumulative Variances			Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/94)			\$-8.8	\$-1.3
Net Change			\$-23.4	\$-5.2
			\$-14.6	\$-3.9

Explanation of Change:

Cost Variance: Reflects increased overhead rates and contractor performance in Guidance & Control Subsystem, Payload Subsystem, Airborne Test Equipment, Systems Engineering, and Test & Evaluation.

The Program Manager and the Program Executive Officer (PEO,T) have been actively engaged with Texas Instrument's Senior management regarding overhead rate issues and re-evaluation of program plans to identify cost savings opportunities.

Schedule Variance: Resulted from software development delays. Program Manager is working with TI to ensure experienced personnel are used to accomplish successful software integration.

There is no impact to the contract or JSOW program for these variances.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 34.6% (9 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 10.1% (\$337.2 / \$3343.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2012)</u>	<u>Total</u>
RDT&E	337.2	50.0	30.7	-	417.9
Procurement	-	26.2	76.2	2807.3	2909.7
MILCON	-	-	3.0	13.1	16.1
O&M	-	-	-	-	-
Total	337.2	76.2	109.9	2820.4	3343.7

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obli- gated</u>	<u>Ex- pended</u>	

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				8.3	8.5	8.5	8.4	4.0
1991				15.6	16.5	16.5	16.1	4.3
1992				41.9	45.8	45.8	45.8	2.8

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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)

1993				52.5	58.7	58.7	58.7	2.7
1994				69.6	79.7	78.3	73.0	2.0
1995				80.2	94.5	83.0	1.0	2.7
1996				41.2	50.0			3.0
1997				24.6	30.7			3.0
Subtot				368.8	417.9	324.3	236.5	

Excludes 102 RDT&E units which are not considered fully configured.

Appropriation: 1507 Weapons Procurement, Navy

1996		21.0		21.0	26.2			3.0
1997	126	10.0	48.6	59.2	76.2			3.0
1998	280	12.1	81.1	95.2	126.2			3.0
1999	545	9.4	106.3	121.8	166.3			3.0
2000	535	5.8	93.1	101.4	142.6			3.0
2001	480	7.7	77.0	89.2	129.2			3.0
2002	675	4.5	95.0	104.0	155.2			3.0
2003	675	4.3	89.7	98.5	151.4			3.0
2004	675	4.2	85.8	94.5	149.6			3.0

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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	Ex- pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

2005	675	4.1	82.5	91.1	148.6			3.0
2006	675	4.0	80.3	88.8	149.2			3.0
2007	675	4.0	78.4	86.9	150.3			3.0
2008	675	4.0	76.7	85.2	151.8			3.0
2009	675	3.9	75.3	83.7	153.6			3.0
2010	675	3.9	72.9	81.3	153.6			3.0
2011	675	3.9	70.8	79.2	154.2			3.0
2012	84	0.5	9.3	11.0	22.0			3.0
Subtot	8800	107.3	1222.8	1392.0	2206.2			

Appropriation: 1205 Military Construction, Navy

1997				2.3	3.0			3.0
1998								3.0
1999				9.6	13.1			3.0
Subtot				11.9	16.1			
Navy	8800	107.3	1222.8	1772.7	2640.2	324.3	236.5	

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force

1998	25	0.2	6.2	6.4	8.5			3.0
1999	50	0.4	9.2	9.6	13.1			3.0
2000	50	0.4	8.5	8.9	12.5			3.0
2001	100		13.9	13.9	20.1			3.0
2002	300	2.7	44.2	53.4	79.7			3.0
2003	300	1.9	39.9	46.4	71.3			3.0
2004	300	1.9	38.2	44.6	70.6			3.0
2005	300	1.8	36.7	43.1	70.2			3.0
2006	300	1.8	35.7	42.0	70.5			3.0
2007	300	1.8	34.8	41.1	71.1			3.0
2008	300	1.8	34.1	37.0	65.9			3.0
2009	300	1.7	33.5	36.3	66.7			3.0
2010	300	1.7	32.4	35.2	66.6			3.0
2011	75	0.4	7.9	8.6	16.7			3.0
Subtot	3000	18.5	375.2	426.5	703.5			
USAF	3000	18.5	375.2	426.5	703.5			
Grand Total	11800	125.8	1598.0	2199.2	3343.7	324.3	236.5	

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17. (U) Production Rate Data:

- a. (U) Deliveries (Plan/Actual) -- None.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

SOURCE: Operations and Support requirements analysis dated 25 January 1995.

ASSUMPTIONS:

There is no antecedent system.
 No additional operational/maintenance personnel at O-Level.
 10 JSOW expenditures per year.
 Deployed aboard 10 CVBG each year - 100 JSOW per CV.
 60 month Serviceable-In-Service-Time (SIST) interval.
 37 year life cycle.

- b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per JSOW Unit	Avg Annual Cost Per ANTECEDENT
Mission Personnel	2.1	N/A
Unit Consumption	0.5	N/A
Depot-AUR Maintenance	0.3	N/A
Depot-COMP RPR	0.0	N/A
Sustaining Support	0.2	N/A
Total	3.1	N/A

Data reflects Operation and Support requirements analysis dated 25 January 1995.

- c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: MHC 51 CLASS

AS OF DATE: December 31, 1994

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1. Designation and Nomenclature (Preferred Name):

MHC 51 (OSPREY Class) Coastal Minehunter Ship

2. DoD Component: Navy3. Responsible Office and Telephone Number:

MINE WARFARE SHIP PROG OFF (FMS303)	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

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4. Program Elements/Procurement Line Items:

RDT&E:
 PE 0604567N (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, 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 provides 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 utilizing low magnetic signature equipment, diesel engines and cycloidal propulsion. Major payload

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MHC 51 CLASS, December 31, 1994

6. Mission and Description (Cont'd):

equipments include the AN/SYQ-13 Navigation, Command, and Control System, AN/SQQ 32 Advanced Minehunting Sonar, and, as modularly deployed, either an AN/SIQ-48 Mine Neutralization System or a mechanical minesweeping system (completing development; space and weight reserved). The MHC ship serves as the "low-mix" complement to the ocean going Mine Countermeasures (MCM) ship. It 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 can 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 their lead ship contract for detail, design, and construction of MHC 53 on 3 October 1989. Milestone IIIB (full rate production) approval was authorized in January 1990. The MHC program force level procurement authorization is for 12 ships. All ships are currently under contract. The class leadship, MHC 51, was delivered in August 1993.

b. Significant Developments Since Last Report --

IMUSA DELIVERY STATUS: Intermarine USA's (IMUSA) second ship, MHC 52, was delivered in July 1994. Their third ship, MHC 55, completed Builder's Sea Trials on 2/10/95 and may deliver before the Program Manager (PM) estimate of June 95. IMUSA CONTRACT STATUS: Extreme

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MHC 51 CLASS, December 31, 1994

7b. Program Highlights (Cont'd):

cost overruns and consequential losses on IMUSA's first two contracts (MHC 51 and 52 ships) have placed the company in a tenuous financial situation. The company relied heavily on favorable Request for Equitable Adjustment (REA) and claim settlement to mitigate losses, however, minimal entitlement was found. The company has filed four lawsuits within the past 3 years totalling \$104M. Trial began on the first suit in the Court of Federal Claims the week of 3/13/95. This suit claims \$28.5M. IMUSA's parent, Intermarine SpA (IMSpA) of Italy, executed severe cost cutting measures at IMUSA in an attempt to minimize any further contract losses. This action resulted in major cutbacks in both management and labor which contributed to additional delivery delays on the last 5 ships. IMSpA and its holding company, Ferruzzi Group, have been reluctant to invest more capital into IMUSA. Navy, Office of the Secretary of Defense (OSD), and congressional concern in getting remaining ships delivered in view of IMUSA's tenuous financial condition led the Navy to develop an approach in which a variety of existant issues could be collectively negotiated under a "global settlement." The intent is to pursue with IMUSA a legal and equitable basis for resolving disputes in the following principal areas (referred to hereinafter as "global settlement"): (1) Collectively resolve all active (unsettled) claims and REAs, i.e., those not currently before the Court of Federal Claims as lawsuits in addition to any other final envisioned or prospective claim/REA issues; (2) Consideration relative to delivery schedule changes; (3) Government procurement of proprietary data rights for ships' life cycle repair and management of Glass Reinforced Plastic (GRP) from IMSpA/IMUSA; and (4) Setting a firm fixed price for the remaining (MHC 58-62) ships. Frequent discussions with IMSpA management have led to productive bilateral efforts to mitigate cash flow during the interim, e.g., Navy's approval on 3/9/95 to release contract retentions earlier than normal and IMSpA's January 95 announcement of their intention to provide additional capital to IMUSA. These efforts have helped mitigate the effects of IMUSA's financial condition upon progress while global settlement efforts continue. The Justice Department will retain principal oversight in lawsuit litigation with IMUSA.

AVONDALE CONTRACT STATUS: In December 94, Avondale Industries, Inc. (Avondale) moved the last of their four ships under contract (MHC 57) from their GRP facility in Gulfport, Mississippi to the New Orleans main shipyard to complete construction. All of Avondale's MHC ships are now completing construction at the main yard. As mentioned in the December 1993 Selected Acquisition Report (SAR), these transfers were necessitated by the lack of a stable and skilled labor base in the Gulfport area. Avondale is scheduled to deliver their lead ship (MHC 53) in July 95. Completion of the 4 ships at Avondale is considered low to medium risk. In November 94, the company submitted

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MHC 51 CLASS, December 31, 1994

7b. Program Highlights (Cont'd):

an REA for \$59.7M--the principal basis of which cited impossibility to meet Government's design specifications due to space constraints. The REA is currently under review.

c. Changes Since As Of Date --

On 1/3/95, the PM, Program Executive Officer (PEO), and representatives from the Chief of Naval Operations met with the NAE (Ass't Sec of Navy, Research, Development, & Acquisition) to discuss IMUSA's corporate financial condition. Discussion centered on approaches for resolving a number of issues within the context of a "global settlement"--see section 7.b. for definition. The NAE encouraged continued pursuit of the global settlement approach including development of alternative approaches for obtaining necessary funding.

MHC 55 Builder's Sea Trials were successfully completed on 2/10/95. This may enable the ship to deliver earlier than the current PM estimate of June 95.

On 3/9/95, the Ass't Sec of Navy (Financial Management) approved a request for "unusual progress payments." In effect, this action authorizes early release of a portion of contract retentions on select IMUSA contracts which will help mitigate the company's current cash flow problems.

8. Threshold Breaches:

There are no breaches to the approved acquisition program baseline dated June 28, 1994. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I	JUN 86	JUN 86	JUN 86
Milestone II	DEC 86	DEC 86	DEC 86
MHC 51 (Leadship) Award	MAY 87	MAY 87	MAY 87
Milestone IIIA	FEB 89	FEB 89	FEB 89
MHC53, 1st ship to 2nd yard	OCT 89	OCT 89	OCT 89
Milestone IIIB	JAN 90	JAN 90	JAN 90
Launch MHC 51 Leadship	MAR 91	MAR 91	MAR 91
MHC 51 Acceptance Trial	NOV 92	JUL 93	JUL 93
MHC 51 Delivery	DEC 92	AUG 93	AUG 93
MHC 53 Delivery	MAR 94	MAR 95	JUL 95(Ch-1)

Milestone I: ASN(S&L) contract design authorization.

Milestone II: ASN(S&L) Program Endorsement Memo authorizing lead ship

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9a. Schedule (Cont'd):

production.

Milestone III: ASN(S&L) authorization for award of FY 89 ships.

Milestone IV: ASN(S&L) authorization for award of FY 90 ships and out.

b. Previous Change Explanations --

MHC 51 Acceptance Trials (AT) and Delivery: Based on continued lag in MHC 51 (program leadship) production, testing, and ILS progress, MHC 51 AT and Delivery milestones were respectively revised from 11/92 to 5/93 and 12/92 to 6/93.

c. Current Change Explanations --

CH-1 MHC 53 Delivery: Current estimate change from March 94 to March 95. The delay primarily stems from extensive technical, engineering, and integrated systems testing problems and their relative impact on production for Avondale's first MHC ship.

d. References --

Production Estimate:

NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:

NAE Approved Acquisition Program Baseline dated June 28, 1994.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
		<u>Objective/Threshold</u>			
Operating Crew (Auth)	51	51	/ 57	51	51
Beam (meters)	11.0	11.0	/ 11.0	11.0	11.0
Draft (Nav) (meters)	2.8	3.68	/ 3.86	3.68	3.68
Length (meters)	57.2	57.2	/ 57.2	57.2	57.2
Full Load Disp (metric tons)	918	918	/ 964	914	914
Speed (knots)	10.0	10.0	/ 10.0	10	10.0
Endurance (NM @ 10 kts) (@ 80% power)	1500.0	1500.0	/ 1500.0	TBD	1500
Propulsion					
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

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10a. Performance Characteristics (Cont'd):

"Draft (Nav)" represents Full Load Navigational Departure Draft.

b. Previous Change Explanations --

An erroneously stated threshold for MHC "Draft" of 2.8 meters was corrected to 3.68 meters through a Program Deviation Request (PDR) approved by the NAE in 7/93. The change was an administrative correction and had no adverse cost, schedule, or performance impact to the program.

Refinement of full load displacement (metric tons) from prior estimate of 918 to 914 based on inclining experiment.

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 June 28, 1994.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	17.2	17.2	18.5
Procurement	1440.2	1440.2	1448.9
Basic	(966.4)		(947.3)
Government Furnished Equipment	(346.9)		(361.6)
Other	(31.9)		(49.7)
Outfitting/Post Delivery	(80.1)		(75.6)
Total Sailaway	(1425.3)		(1434.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(14.9)		(14.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 92 Base-Year \$	1457.4	1457.4	1467.4

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11a. Total Program Cost and Quantity (Cont'd):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	90.9	90.9	83.7
Development (RDT&E)	(-2.2)	(-2.2)	(-2.3)
Procurement	(93.1)	(93.1)	(86.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1548.3	1548.3	1551.1

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>12</u>	<u>12</u>	<u>12</u>
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 March 11, 1992.

Approved Program:

NAE Approved Acquisition Program Baseline dated June 28, 1994.

12. Unit Cost Summary:

	<u>Current Estimate (DEC 94 SAR)</u>	<u>UCR Baseline (JUN 94 APB)</u>	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY92\$)	1467.4	1457.4	
(2) Quantity	12	12	
(3) Unit Cost	122.28	121.45	0.69

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12. Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY92\$)	1448.9	1440.2	
(2) Quantity	12	12	
(3) Unit Cost	120.74	120.02	0.60

All categories of cost include outfitting and post delivery.

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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	-	-6.8	-	-6.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.2	-28.9	-	-27.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.2	-35.7	-	-34.5
Current Changes:				
Economic	-	6.7	-	+6.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	30.4	-	+30.4
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	-	+37.3	-	+37.3
Total Changes	+1.2	+1.6	-	+2.8
Current Estimate	16.2	1534.9	-	1551.1

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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	+1.3	-17.5	-	-16.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.3	-17.5	-	-16.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	26.0	-	+26.0
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	-	+26.2	-	+26.2
Total Changes	+1.3	+8.7	-	+10.0
Current Estimate	18.5	1448.9	-	1467.4

b. Previous Change Explanations --

RDT&E

Estimating: Award of RDT&E,N based shipbuilder claims.

Procurement

Economic: Net cumulative effect of revised OSD inflation indices.

Estimating: For 12/92 SAR, net changes based on FY 92 contract award savings, reduction of funding to ceiling for FY 93 program year ships, and reduction in outfitting and post delivery requirements. For 12/93 SAR, net increase for contract claims coverage, small increase in GFE and outfitting and post delivery estimates.

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13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised OSD inflation indices (Economic)	N/A	+6.7
Net increase based on: additional contract change order reserve requirements, basic contract increases, and economic adjustment. (Estimating)	+18.2	+18.2
Net increase due primarily to added MHC shock test preparation costs and greater shock testing and analysis requirements. (Estimating)	+2.5	+4.0
Net increase resulting primarily from added support services requirements. (Estimating)	+3.6	+4.2
Adjustment in ships' outfitting and post Delivery estimates. (Estimating)	+1.7	+4.0
Adjustment for current and prior year inflation. (Support)	+0.2	+0.2
Procurement Subtotal	+26.2	+37.3

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
129.025	-0.008	-0.001	--	--	0.225	--	0.017	0.233	129.258

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement -- MHC 53: AVONDALE INDUSTRIES, NEW ORLEANS, LA N00024-89-C-2162, FPI Award: October 3, 1989 Definitized: October 3, 1989	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$62.4	\$75.0	1

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15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$70.6	\$85.0	1	\$85.0	\$85.0

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (11/30/94)	\$-42.6	\$-0.6
Net Change	\$-6.3	\$-1.7
	\$36.3	\$-1.1

Explanation of Change:

(\$M/Contract Base Year)

MHC 53 is Avondale's lead contract. Many of the production problems and inefficiencies experienced on the lead ship at the lead yard, Intermarine USA, have been seen on this contract. The fact that this shipbuilding effort entails Avondale's first time involvement with state of the art foreign manufacturing techniques and tooling associated with glass reinforced plastic (GRP) ship construction contributes heavily to the cost overrun and schedule delay experienced to date. Many of these problems relate to lack of production learning, engineering and design changes, significant rework, and late material receipts. The positive net change from the prior SAR in both cost and schedule cumulative variance results from a one time authorization to reprogram (rebaseline) the MHC 53 cost performance report in February 1994 (a +\$46.5M cost and +\$45.4M schedule reprogramming adjustment). Unfavorable cost variance trends continued through calendar 1994 validating the PM's prediction on the prior year's SAR that further cost deterioration would be seen. The PM's current cost at completion estimate is \$126.2M (\$41.2M projected loss). The contract is budgeted to ceiling. In December 94, Avondale forwarded a \$59.7M Request for Equitable Adjustment (REA) alleging government defective specifications. MHC 53 delivery estimate is July 95.

<u>MHC 54:</u>			Initial Contract Price		
AVONDALE INDUSTRIES, NEW ORLEANS, LA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-90-C-2304, FPI			\$63.6	\$66.2	1
Award: August 2, 1990					
Definitized: August 2, 1990					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$65.1	\$67.6	1	\$66.7	\$67.6

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.5	\$-1.3
Cumulative Variances To Date (11/30/94)	\$-1.3	\$-0.9
Net Change	\$3.2	\$0.4

Explanation of Change:

Dollar values reported in contract base year.

MHC 54 is Avondale's second ship. The positive net change in cumulative cost and schedule performance results from a one time authorization for Avondale to reprogram their MHC 54 contract CPR. The reprogramming amounted to a \$+4.6M cost and \$+3.7M schedule adjustment. Avondale's performance has since deteriorated to a negative \$-4.5M--and they project an at completion cost of \$64.4M (\$8.0M overrun to the \$56.4M current contract target cost). In the prior (12/93) SAR submit, the PM forecast that MHC 54 cost growth would continue based on the relative lack of learning migrating from the MHC 53 lead ship. This has occurred. The PM's cost EAC of last year is minimally changed from a year ago, \$70.9M to current \$71.4M; the increase attributable to interim negotiated changes only. This EAC represents a \$15.0M overrun to the current contract target cost equating to a projected \$3.8M loss on the contract. MHC 54 is completing construction at Avondale's main yard in New Orleans. The PM's estimated delivery is January 96.

MHC 55:
INTERMARINE USA, SAVANNAH, GA
N00024-91-C-2214, FPI
Award: April 1, 1991
Definitized: April 1, 1991

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$71.5	\$78.0	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$74.7	\$81.3	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$74.7	\$78.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (11/30/94)	\$-9.0	\$-5.9
Net Change	\$-9.0	\$-5.9

Explanation of Change:

This is the first SAR in which MHC 55 contract data is being reported.

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15. Contract Information (Cont'd):
 \$M/Contract Base Year Dollars

Cumulative to date cost performance is \$-9.0M. MHC 55 is IMUSA's third ship. Major losses on the company's first 2 contracts (MHCs 51 and 52) resulted in combined losses totalling about \$100M. The extent of these losses were indicative of the magnitude of technical, production, and corporate management problems. These losses have severely impacted IMUSA's corporate operations resulting in significant management and labor turnover which, in turn, caused further production inefficiency and disruption to later ships. While operating efficiencies have gradually stabilized, the extent of unfavorable performance to date combined with uncertainty for future business growth (a factor which could meaningfully offset overhead and other costs of operation for later contract effort) has minimized profitability. The PM EAC of \$76.0M for MHC 55 is \$8.2M over the \$67.8M current contract target cost equating to a \$2.8M profit. As a result of a negotiated higher profit structure (in excess of 10%), this is the only IMUSA contract currently estimated to show a profit. MHC 55 successfully completed Builder's Sea Trials (BT) on 2/10/95; a major accomplishment in respect to the IMUSA's prior two ships which required several attempts before successfully completing BT. The PM delivery estimate for MHC 55 is June 1995, however, the ship may be able to deliver earlier.

<u>MHC 56/57 (OPTION):</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
AVONDALE INDUSTRIES, NEW ORLEANS, LA			\$111.0	\$115.3	2
N00024-90-C-2304, FPI					
Award: March 29, 1991					
Definitized: March 29, 1991					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$112.4	\$116.8	2	\$116.8	\$116.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-5.6	\$14.5	
Cumulative Variances To Date (11/30/94)			\$-0.5	\$0.5	
Net Change			\$5.1	\$-14.0	

Explanation of Change:

\$M/Contract Base Year Dollars

MHCs 56 and 57 are Avondale's final two (of four) ships. The positive net change cost variance of \$5.1M results from a \$+6.0M contract performance rebaselining authorization in February 94. Since the rebaselining, cost performance has deteriorated to \$-0.5M.

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15. Contract Information (Cont'd):

Contract efficiencies for these 2 ships, though improved over the first 2 ships, are not expected to improve sufficiently to enable a contract profit. Avondale projects a combined MHC 56/57 at completion cost of \$115.0M--up almost \$9.0M from their \$106.1M EAC of a year ago. The PM's current cost EAC of \$117.3M is up \$1.9M (+1.6%) from the \$115.4M EAC noted in last year's SAR (The \$117.3M EAC results in a \$0.5M loss). Both MHCs 56 and 57 have been launched at Avondale's GRP yard in Gulfport, MS and moved to the company's main shipyard in New Orleans for completion and delivery. The GRP facility was closed in December 94. The current PM delivery estimates are: MHC 56, July 96; MHC 57, January 97.

MHC 58, 59, & 60:			Initial Contract Price		
			Target	Ceiling	Qty
INTERMARINE USA, SAVANNAH, GA			\$178.0	\$199.6	3
N00024-92-C-2203, FPI					
Award: April 22, 1992					
Definitized: April 22, 1992					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$181.2	\$202.9	3	\$178.0	\$198.5	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
Cumulative Variances To Date (11/30/94)			\$-3.8	\$-15.2	
Net Change			\$-16.3	\$-16.9	
			\$-12.5	\$-1.7	

Explanation of Change:

Values reported in contract base year dollars.

MHC 58-60 contract covers IMUSA's respective 4th, 5th, and 6th production ships. As noted in the MHC 55 contract narrative, the magnitude of IMUSA's contract losses on their first 2 ships and impact on the corporate structure, high overhead, and continued inability to improve production learning has caused increasing overruns on their later contracts. The prior SAR reported negative cost variance of \$-3.8M has declined to \$-16.3M. IMUSA's cost EAC of \$178.0M is \$8M higher (after interim year negotiated changes are removed) than the prior SAR reported EAC. The PM's at completion cost estimate of \$198.5M is \$29.4M over the contract's \$169.1M current target cost resulting in a \$2.6M projected loss on the contract. As noted with other IMUSA contracts, any lawsuit awards or favorable global settlement negotiations will reduce currently predicted loss positions. Current PM delivery estimates are: MHC 58, 4/96; MHC 59, 12/96; and MHC 60, 9/97.

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15. Contract Information (Cont'd):

<u>MHC 61/62 (OPTION):</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
INTERMARINE USA, SAVANNAH, GA				
N00024-92-C-2203, FPI	\$118.8	\$133.2	2	
Award: March 31, 1993				
Definitized: March 31, 1993				

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$119.6	\$134.1	2	\$125.4	\$127.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.7	\$-1.4
Cumulative Variances To Date (11/30/94)	\$-2.8	\$-11.5
Net Change	\$-2.1	\$-10.1

Explanation of Change:

Values reported in contract base year dollars.

MHCs 61 & 62 are IMUSA's final production ships and the last 2 ships of the program. Much of the problematic cost and schedule influences from IMUSA's earlier ships have impacted this contract. MHCs 61 and 62 current cost and schedule performance indicators are not favorable. Cost variance declined moderately from the prior SAR from \$-0.7M to \$-2.8M current. Schedule performance declined from \$-1.4M to \$-11.5M current. The current PM cost EAC of \$128.2M is \$16.5M over the current \$111.7M target cost equating to a \$-0.4M projected loss on the contract. Though MHC 61 recently started physical construction in November 94 and MHC 62 is not scheduled to begin until July 95, the influence of earlier contract schedule delays (as noted in the \$-11.5M current schedule variance above) and a better definition of IMUSA's production capability have resulted in the PM's current delivery estimates of: MHC 61, 5/98; and MHC 62, 1/99. As noted with other IMUSA contract effort, any lawsuit awards or negotiated global settlement will reduce currently projected loss estimates.

NOTE: MHC 52 contract effort is over 90% complete (ship delivered in July 1994). This contract will no longer be covered in the SAR.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 66.7% (10 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 97.3% (\$1509.3 / \$1551.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2000)</u>	<u>Total</u>
RD&E	16.2	-	-	-	16.2
Procurement	1493.1	7.4	15.0	19.4	1534.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1509.3	7.4	15.0	19.4	1551.1

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

1986		1.8		1.8	1.5	1.5	1.5	2.8
1987		7.9		7.9	6.7	6.7	6.7	2.7
1988		4.3		4.3	3.8	3.8	3.8	3.0
1989		3.7		3.7	3.4	3.4	3.4	4.2
1990		0.8		0.8	0.8	0.8	0.8	4.0
Subtot		18.5		18.5	16.2	16.2	16.2	

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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		210.6	203.1	190.0	175.0	164.3	1.4
1987				0.8	0.8	0.8	0.6	1.5
1988								2.6
1989	2		254.9	241.3	244.5	223.7	211.6	3.3
1990	2		236.0	239.3	249.3	222.2	196.2	1.1
1991	2		201.0	189.4	203.3	174.4	150.8	1.6
1992	3		311.8	296.1	328.0	262.0	163.0	2.5
1993	2		219.9	224.2	251.5	184.3	55.9	3.2
1994				15.5	17.9	3.4	1.4	4.1
1995				6.6	7.8			2.7
1996				6.0	7.4			3.0
1997				11.9	15.0			3.0
1998				10.8	14.1			3.0
1999				2.8	3.8			3.0
2000				1.1	1.5			3.0
Subtot	12		1434.2	1448.9	1534.9	1245.8	943.8	
Grand Total	12	18.5	1434.2	1467.4	1551.1	1262.0	960.0	

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MHC 51 CLASS, December 31, 1994

16c. Program Funding Summary (Cont'd):

FY 1990 "Flyaway" column excludes \$14.7M 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 --

No quantities are funded for the budget year and out.

c. Deliveries (Plan/Actual) --

	<u>To Date</u>
RD&E	0/0
Procurement	2/2

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 maintenance, and Indirect Costs including training, publications, engineering and technical services.

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*** UNCLASSIFIED ***

MHC 51 CLASS, December 31, 1994

18b. Operating and Support Costs (Cont'd):

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	0.8	N/A
Fuel	0.1	N/A
Direct Maintenance	0.8	N/A
Indirect Costs	0.1	N/A
Total	3.6	N/A

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: T-AGOS SURV SHIP

AS OF DATE: December 31, 1994

SUBJECT	INDEX	PAGE
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1. Designation and Nomenclature (Preferred Name):

T-AGOS CLASS OCEAN SURVEILLANCE SHIP

2. DoD Component: Navy3. Responsible Office and Telephone Number:

Naval Sea Systems Command (PMS325) CAPT R.E. Williams USN
Zachary Taylor Building (NC#3) Assigned: September 14, 1994
2531 Jefferson Davis Highway AV 332-3507 COMM (703) 602-1111
Arlington, VA 22242-5160

CLEAR
FOR OPEN INFORMATION
IS INFORMATION

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)

MAR 24 1995 2
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs:

Surveillance Towed Array Sensor System (SURTASS)

95-C-0305
1995
Jim A. Andersen
NSE
Business Sensitive
Pages 3, 4, 13

- 1 -

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95-C-0822

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T-AGOS SURV SHIP, December 31, 1994

6. Mission and Description:

MISSION: Operated by the Military Sealift Command (MSC), 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 two 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 rescope 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, Inc. (HMI) 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 (OR) 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. This program consists of four Small Waterplane Area Twin Hull (SWATH) ships. The last of these ships was delivered on 1 JUL 93.

OR 164-095-88 dated 12 JUN 87 established the T-AGOS 23 Class Program (SWATH). Tampa Shipyards Inc. (TSI) was awarded a production contract for T-AGOS 23 on 28 MAR 91 with options for up to five additional ships. The FY92 T-AGOS 24 option expired on 31 AUG 92. The FY93 Appropriations Act cut \$58.3M from the FY90 T-AGOS 23 and \$148.5M from the FY92 T-AGOS 24; thereby rescinding the FY92 T-AGOS 24. The FY94 Appropriations Act restored \$58.4M for the FY90 ship.

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T-AGOS SURV SHIP, December 31, 1994

7a. Program Highlights (Cont'd):

The FY96 Congressional Budget reflects ships in FY90 and FY99,
changing the program total from 26 to 24.

(b)(4)



The T-AGOS 23 requirement was reviewed by CNO, and in OPNAV memo Ser
00/4U500151 dated 17 MAY 94 concluded that the platform remains
essential. This position was validated by the Joint Requirements
Oversight Council (JROC) in JROCM-038-94 memo dated 23 JUN 94.

(b)(4)



This is the final SAR based on ship deliveries in excess of 90%.

This system will satisfy mission requirements.

(b)(4)



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T-AGOS SURV SHIP, December 31, 1994

7c. Program Highlights (Cont'd):

(b)(4)

8. Threshold Breaches:

There are two schedule breaches to the Approved Program Baseline (APB) dated 8 APR 93 (see Section 9). These breaches are being addressed in a Program Deviation Report. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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
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
T-AGOS 19 Class NPDM	N/A	N/A	SEP 88
T-AGOS 23 Class DCP	N/A	N/A	AUG 89
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

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T-AGOS SURV SHIP, December 31, 1994

9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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)
Organic Support Capability Date	N/A	OCT 95	OCT 95
Service Depot Support Date	N/A	OCT 95	OCT 95
Delivery: (T-AGOS 23)	MAY 94	NOV 95	NOV 98(Ch-2)
IOC (T-AGOS 23 Class)	DEC 96	FEB 98	MAY 99(Ch-3)
Delivery: (T-AGOS 28)	JAN 00	N/A	N/A
Last Ship Delivery	N/A	NOV 02	JUL 02(Ch-4)

b. Previous Change Explanations --

IOC (T-AGOS 19 Class): The delay from SEP 92 to JUN 93 for the T-AGOS 19 Class Initial Operational Capability (IOC) date was due to slippages in delivery.

Delivery (T-AGOS 22): The delay from APR 93 to AUG 93 was due to the cascading impact of delivery slippages of earlier ships. The change from AUG 93 to JUL 93 was due to early completion of Acceptance Trials.

Delivery (T-AGOS 23): The delay from MAY 94 to JAN 95 was due to a lack of production progress.

IOC (T-AGOS 23 Class): The delay from DEC 96 to AUG 97 was due to a slippage in ship delivery. The delay from AUG 97 to FEB 98 was due to an additional slip in ship delivery.

Last Ship Delivery (T-AGOS 23 Class): The delay from JAN 00 to NOV 02 was due to restructuring of the program. The total number of ships decreased from 28 to 26, necessitating a change in the Last Ship Delivery date.

c. Current Change Explanations --

(Ch-1) Delivery (T-AGOS 22): The delay from JUL 93 to AUG 93 reflects that actual ship delivery.

(Ch-2) Delivery (T-AGOS 23): The delay from NOV 95 to NOV 98 is based on a best estimated delivery date (BEDD) when the TSI T-AGOS 23 contract is resolved and a new shipbuilder is selected to complete the ship.

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T-AGOS SURV SHIP, December 31, 1994

9c. Schedule (Cont'd):

(Ch-3) IOC (T-AGOS 23): The delay from FEB 98 to MAY 99 for the T-AGOS 23 Initial Operational Capability (IOC) date is due to slippage in delivery date.

(Ch-4) Last Ship Delivery: The change from NOV 02 to JUL 02 is due to a restructuring of the program. The total number of ships decreased from 26 to 24, necessitating a change in the Last Ship Delivery date.

d. References --

Production Estimate:

NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:

NAE Approved Acquisition Program Baseline dated July 20, 1994.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program</u> <u>Objective/Threshold</u>		<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
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

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T-AGOS SURV SHIP, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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"	TBD	281'6"
Beam (maximum) (ft)	95'9"	95'9"	/ 95'9"	TBD	95'9"
Draft (mean) (ft)	26	26	/ 26	TBD	26
Displacement (Ltons)	5380	5380	/ 5380	TBD	5380
Propulsion					
Diesel Electric	3	3	/ 3	TBD	3
Shafts	2	2	/ 2	TBD	2
SHP (ea)	2500	2500	/ 2500	TBD	2500
Accommodations					
Ship's Company	26	26	/ 26	TBD	26
Technicians (19)	19	19	/ 19	TBD	19
Speed (kts)	12	12	/ 12	TBD	12
Radars	2	2	/ 2	TBD	2
Sonars	2	2	/ 2	TBD	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 July 20, 1994.

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T-AGOS SURV SHIP, December 31, 1994

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	22.9	22.9	24.6
Procurement	1104.9	1105.0	835.5
Ship Construction	(1057.1)		(805.7)
Post Delivery	(24.7)		(16.5)
Outfitting	(23.1)		(13.3)
Total Sailaway	(1104.9)		(835.5)
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	0.0	0.0
Total FY 78 Base-Year \$	1127.8	1127.9	860.1
Escalation	903.5	903.4	635.8
Development (RDT&E)	(15.5)	(15.5)	(17.1)
Procurement	(888.0)	(887.9)	(618.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2031.3	2031.3	1495.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	28	28	24
Total	28	28	24

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 July 20, 1994.

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T-AGOS SURV SHIP, December 31, 1994

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (JUL 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY78\$)	860.1	1127.9	
(2) Quantity	24	28	
(3) Unit Cost	35.838	40.282	-11.034
b. Procurement			
(1) Cost (BY78\$)	835.5	1105.0	
(2) Quantity	24	28	
(3) Unit Cost	34.813	39.464	-11.787

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T-AGOS SURV SHIP, December 31, 1994

13. Cost Variance Analysis:**a. Summary (Current (Then-Year) Dollars in Millions)**

	RD&E	PROC	MILCON	TOTAL
Production Estimate	38.4	1992.9	0.0	2031.3
Previous Changes:				
Economic	-0.3	-7.0	-	-7.3
Quantity	-	-317.3	-	-317.3
Schedule	-	+33.6	-	+33.6
Engineering	-	-	-	-
Estimating	+3.0	+161.4	-	+164.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.7	-129.3	-	-126.6
Current Changes:				
Economic	0.2	3.0	-	+3.2
Quantity	-	-313.9	-	-313.9
Schedule	-	7.4	-	+7.4
Engineering	-	-	-	-
Estimating	0.4	-105.9	-	-105.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.6	-409.4	-	-408.8
Total Changes	+3.3	-538.7	-	-535.4
Current Estimate	41.7	1454.2	-	1495.9

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T-AGOS SURV SHIP, December 31, 1994

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	22.9	1104.9	0.0	1127.8
Previous Changes:				
Quantity	-	-158.0	-	-158.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.4	+65.4	-	+66.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.4	-92.6	-	-91.2
Current Changes:				
Quantity	-	-128.8	-	-128.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.3	-48.0	-	-47.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.3	-176.8	-	-176.5
Total Changes	+1.7	-269.4	-	-267.7
Current Estimate	24.6	835.5	-	860.1

b. Previous Change Explanations --

RD&E

Economic: Revised economic escalation indices.

Estimating: Adjustment for Current and Prior Inflation;
Revised program estimate.

Procurement

Economic: Revised economic escalation indices;

Quantity: Decrease in program from 28 to 25 ships; Increase
in program from 25 to 26 ships.

Schedule: Cost changes associated with reduction in quantity
and shift in procurement profile; Change in annual
procurement buy profile.

Estimating: Current and Prior Inflation offset; Revised

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T-AGOS SURV SHIP, December 31, 1994

13b. Cost Variance Analysis (Cont'd):

program estimate; Estimating variance resulting
from Quantity Allocation.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation. (Estimating)	-0.2	-0.1
Change in Ship Design (Estimating)	+0.5	+0.5
RD&E Subtotal	+0.3	+0.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+2.4
Total Variance associated with decrease of 2 ships from 26 to 24.	-219.4	-536.1
- Quantity Variance resulting from decrease of 2 ships. (Quantity)	-128.8	-313.9
- Estimating Variance resulting from Quantity decrease. (Estimating)	-90.6	-222.2
- Change in annual procurement buy profile due to the reduction of 2 ships. (Schedule)	--	+7.4
- Adjustment for Current & Prior Inflation. (Estimating)	-1.2	-2.1
- Change resulting from a decrease of 2 ships from 26 to 24. (Estimating)	+43.8	+118.4
Procurement Subtotal	-176.8	-409.4

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

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T-AGOS SURV SHIP, December 31, 1994

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
72.55	-0.17	-14.21	1.71	--	2.45	--	--	-10.22	62.33

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

T-AGOS 23:

TAMPA SHIPYARDS, INC., TAMPA, FL

N00024-91-C-2308, FPIF

Award: March 28, 1991

Definitized: March 28, 1991

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$53.6	\$63.4	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$53.6	\$63.4	1

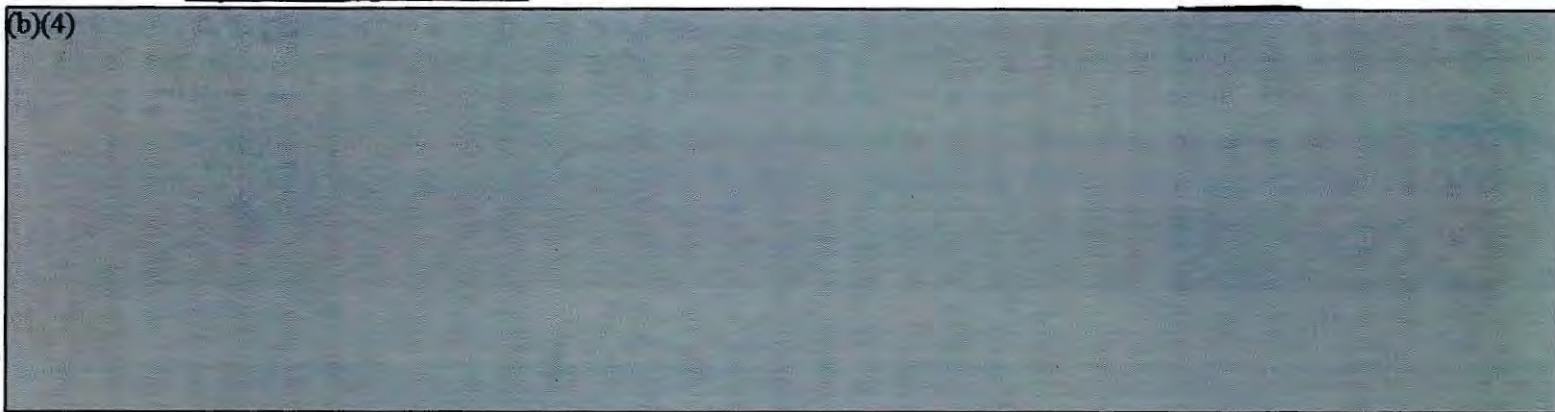
Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$56.8	\$63.4

Previous Cumulative Variances
Cumulative Variances To Date (06/27/93)
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
\$-8.4	\$0.0
\$-8.4	\$0.0
\$0.0	\$0.0

Explanation of Change: None.

(b)(4)



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T-AGOS SURV SHIP, December 31, 1994

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 74.1% (20 yrs/27 yrs)

(2) Percent Program Cost Appropriated: 82.3% (\$1231.7 / \$1495.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY76-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RDT&E	39.1	-	-	2.6	41.7
Procurement	1192.6	-	-	261.6	1454.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1231.7	-	-	264.2	1495.9

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1976				0.7	0.6	0.6	0.6	6.6
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

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T-AGOS SURV SHIP, December 31, 1994

16c. 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)

1982				0.2	0.3	0.3	0.3	7.6
1983				0.3	0.5	0.5	0.5	4.9
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				1.2	2.3	2.3	2.3	4.0
1991				1.3	2.6	2.5	2.5	4.3
1992				1.3	2.7	2.7	2.7	2.8
1993				0.8	1.6	1.6	1.6	2.7
1994				0.5	1.0	0.6	0.6	2.0
1995				0.2	0.5			2.7
1996								3.0
1997								3.0
1998				0.9	2.1			3.0
1999				0.2	0.5			3.0

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T-AGOS SURV SHIP, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

Subtot				24.6	41.7	38.1	38.1	
--------	--	--	--	------	------	------	------	--

Appropriation: 1611 Shipbuilding and Conversion, Navy

1979	2		63.7	62.1	83.2	83.2	83.2	9.6
1980	1		26.8	26.8	39.0	32.1	32.1	9.9
1981	5		128.4	128.4	192.9	192.8	192.8	9.6
1982	4		122.7	114.8	177.6	177.6	177.6	7.5
1984				1.6	2.6	2.6	2.6	3.6
1985	2		44.9	44.9	73.4	73.4	73.4	2.1
1986	1		21.7	21.7	36.4	36.4	36.4	1.4
1987	4		101.8	101.8	174.2	162.7	156.5	1.5
1988				5.2	9.1	6.2	6.2	2.6
1989	3		118.1	113.6	205.9	177.8	150.1	3.3
1990	1		100.1	98.6	183.9	124.0	94.6	1.1
1991				1.4	2.6			1.6
1992				3.4	6.7			2.5
1993				2.4	4.9			3.2
1994				0.1	0.2			4.1

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T-AGOS SURV SHIP, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1995								2.7
1996								3.0
1997								3.0
1998				0.1	0.3			3.0
1999	1		107.3	102.7	246.1			3.0
2000				1.7	4.3			3.0
2002				4.2	10.9			3.0
Subtot	24		835.5	835.5	1454.2	1068.8	1005.5	
Grand Total	24		835.5	860.1	1495.9	1106.9	1043.6	

Note: Expenditures and Obligations reflect program office records as 21 FEB 95.

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RD&E
Procurement

To Date
0/0
22/22

b. Approved Design-to-Cost Objective -- N/A.

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T-AGOS SURV SHIP, December 31, 1994

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 FY93 Actuals, five-year maintenance cost averages, and FY94 approved expenses.

b. Costs -- (FY 1978 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per T-AGOS 1 Class	Avg Annual Cost Per *No Equivalent Class
Direct Personnel	1.0	N/A
Direct Operations	0.1	N/A
Direct Maintenance	0.5	N/A
Indirect Costs	0.3	N/A
Total	1.9	N/A

Military Sealift Command (MSC) does not have operating experience for an equivalent hull.

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T-AGOS SURV SHIP, December 31, 1994

18b. Operating and Support Costs (Cont'd):

NOTE: The T-AGOS Class Program consists of three separate and distinct ship classes:

T-AGOS 1 Class Monohull

T-AGOS 19 Class Small Waterplane Area Twin Hull (SWATH)

T-AGOS 23 Class SWATH

CARS software does not provide the capability to list the O&S data for more than one ship class. Therefore, the following additional data is provided:

COST ELEMENT	Avg Annual Costs Per T-AGOS 19 Class	Avg Annual Costs Per *No Equivalent Hull
Direct Personnel	1.100	0.000
Direct Operations	0.600	0.000
Direct Maintenance	0.600	0.000
Indirect Costs	0.300	0.000
Total:	2.600	0.000

Military Sealift Command (MSC) does not have operating experience for an equivalent hull.

COST ELEMENT	Avg Annual Costs Per T-AGOS 23 Class	Avg Annual Costs Per T-AGOS 19 Class
Direct Personnel	1.100	0.900
Direct Operations	0.700	0.600
Direct Maintenance	0.600	0.400
Indirect Costs	0.300	0.200
Total:	2.700	2.100

c. Contractor Support Costs -- None.

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AF-16 MILSTAR

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: MILSTAR

AS OF DATE: December 31, 1994

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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 P. Kwiatkowski
Assigned: December 9, 1991
AV 833-4877 COMM 310-336-4877

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0303601F, 0303603F, 0604479F

PROCUREMENT:

APPN 1506 ICN 20MLSTRS (Navy)
APPN 2035 ICN 20MLSTRS (Army)
APPN 3010 ICN 20MLSTRS (Air Force)
APPN 3080 ICN 20MLSTRS (Air Force)

SAF/PAS

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AND SECURITY INFORMATION
DEPARTMENT OF DEFENSE

OATSD (PA) DFOISR 95-c-062

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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
Milstar Polar Adjunct
Advanced MILSATCOM

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.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In 1983, the Milstar Satellite Communications System program was designated with the 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. FSD began in Jun 83 with a Raytheon/Rockwell team awarded the FSD contract under a leader/follower strategy. After Milestone IIIA for Low-Rate Initial Production (LRIP) was held in May 89, the LRIP contracts to procure Command Post Terminals were awarded in Sep 89.

The Low Cost Terminal (LCT) was intended to support users at a lower cost while retaining nearly the same functionality of the CP Terminal. Risk reduction contracts were awarded in Jan 92 and the LCT program was designated a Low Level Technology Demonstration (LLTD) program in Aug 92. However, the program was terminated due to lack of firm user requirements. The Command Post Terminal "Buyout" contracts were awarded in May 93 for the remaining 44 terminals to both Rockwell and Raytheon.

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

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7a. (U) Program Highlights (Cont'd):

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. A contract for the Milstar II satellite development was awarded in Oct 92 following a successful Oct 92 Defense Acquisition Board (DAB) Program Review.

In Dec 92 the first Development Flight Satellite (Sat-1, formerly DFS-1) was delivered to storage in preparation for a FY93 launch. However, as a result of an Aug 93 Titan IV failure and an Aug 92 Centaur failure, the launch of Sat-1 was delayed until 7 Feb 94. Also, in accordance with the Office of the Secretary of Defense (OSD) sponsored Bottom-Up Review (BUR) and as directed in the Defense Planning Guidance (DPG), the program will transition after Satellite 6 to a lower cost Advanced Extremely High Frequency (EHF) satellite. As a consequence, the Air Staff issued formal direction to initiate planning for a consolidated, multi-frequency, advanced MILSATCOM replenishment program. As a result of these schedule and programmatic changes, a Program Deviation Report (PDR) and a revised Acquisition Program Baseline (APB) were submitted.

b. (U) Significant Developments Since Last Report -- Satellite 1, launched on 7 Feb 94, successfully completed Air Force Operational Test and Evaluation Center's (AFOTEC) Dedicated Asset Test (DAT) and Navy's Follow-On Operational Test & Evaluation (FOT&E) on 9 Sep 94. In addition, Satellite 1 supported OPERATION UPHOLD DEMOCRACY (Haiti) with back up command and control voice communication capability. Following completion of developmental testing the program office turned over Satellite Control Authority (SCA) to Air Force Space Command (AFSPC) on 1 Nov 94.

On 30 Jun 94, a contract modification was issued to convert Satellite 3 from a Low Data Rate (LDR) only to a LDR/MDR (Medium Data Rate) configuration and to reschedule Satellite 3M and Satellite 4 deliveries.

A revised Acquisition Strategy Report (ASR) was approved by the Office of the Secretary of Defense (OSD) on 13 Jun 94, implementing Defense Planning Guidance (DPG) to terminate Milstar II after Satellite 6 and transition to a lower cost Advanced Extremely High Frequency (EHF) program as recommended in the Bottom-Up Review (BUR).

It further outlined our strategy for streamlined procurement of Satellites 5 and 6, including initial plans for an advanced combined parts buy (CPB). The final implementation of the Streamlined Program delayed the CPB for Satellites 5 and 6 from Jan 94 to Jun 94 pending satisfaction of exit criteria for the build of Satellites 5 and 6 -- completion of DAT (per updated Test and Evaluation Master Plan dated 22 Apr 94) and Milstar II System Critical Design Review (CDR). Congress was notified and a contract to initiate the efficient

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7b. (U) Program Highlights (Cont'd):

procurement of these remaining Milstar satellites was awarded on 1 Nov 94.

The Low Rate Initial Production (LRIP) Command Post Terminal deliveries were completed under target price in Jul 94.

During the FY96 Programming and Budgeting Cycle, \$310M was taken from the FY96-01 Milstar program, including \$108M in FY96, without directed content or schedule change. Options for adjusting program content are being investigated to ensure executability of the FY96 program and outyear funding issues are being addressed in the FY97 Programming and Budgeting Cycle.

The Milstar program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --

In a 17 Jan 95 memo, the Defense Acquisition Executive (DAE) directed the program office to decouple the Advanced EHF and Milstar programs, and to appropriately revise the Milstar baseline to only include the 2 Milstar block I and 4 Milstar block II satellites. The revised Milstar Acquisition Program Baseline (APB) was approved by the DAE on 6 Feb 95.

8. (U) Threshold Breaches:

There are no breaches to the DAE approved Acquisition Program Baseline (APB) dated February 6, 1995, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

Satellites

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	OCT 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			
Start	JUL 93	FEB 94	FEB 94 (Ch-1)
Complete	JAN 94	JUN 94	JUN 94 (Ch-1)
Milstar I Phase 1 IOT&E			
Start	FEB 94	AUG 94	AUG 94 (Ch-1)

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9a. (U) Schedule (Cont'd):
Satellites

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Complete	AUG 94	SEP 95	SEP 95 (Ch-1)
Dedicated Asset Test			
Start	N/A	AUG 94	AUG 94
Complete	N/A	SEP 94	SEP 94 (Ch-1)
Milstar I Phase 2 IOT&E			
Start	MAY 95	MAR 96	MAR 96
Complete	NOV 95	SEP 96	SEP 96
IOC I	MAR 96	JAN 97	JAN 97
Mission Control Organic Support	SEP 96	SEP 96	SEP 96
Capability			
Milstar II IOT&E			
Start	APR 99	AUG 99	AUG 99
Complete	SEP 99	FEB 00	FEB 00
Milstar II MS III	SEP 99	N/A	N/A (Ch-2)
IOC II	OCT 00	OCT 00	OCT 00
Constellation Control Organic Support	DEC 00	DEC 00	DEC 00
FOC	DEC 04	DEC 04	DEC 04

Acronyms & Abbreviations:

CDR - Critical Design Review Capability
DAB - Defense Acquisition Board
Dev - Development
DT&E - Developmental Test and Evaluation
FOC - Full Operational Capability
IOC - Initial Operational Capability
IOT&E - Initial Operational Test and Evaluation
LDR - Low Data Rate
MS - Milestone

b. (U) Previous Change Explanations --

Satellite 1 On-Orbit DT&E and Milstar I Phase 1 and Phase 2 IOT&E milestones delayed due to an Aug 92 launch failure of a Centaur upper stage on an Atlas launch vehicle which impacted the planned launch of the first Development Flight Satellite (DFS-1, now Sat-1).

Milstar II IOT&E, MS III, and IOC II milestones changed due to \$180M budget reduction in the FY1994 President's Budget.

New Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E testing milestones replaced Satellite 1 On-Orbit DT&E and Milstar I Phase 1

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9b. (U) Schedule (Cont'd):

Satellites

IOT&E Start/Complete milestones.

Milstar I Phase 2 IOT&E Start/Complete and IOC I milestones changed to reflect change in DPS-2 launch manifest date.

Milstar II MS III milestone deleted due to removal of production phase per the Defense Planning Guidance resulting from the Bottom-Up Review (BUR). Advanced EHF MS I milestone added to reflect transition to lower cost satellites launch on Medium Launch Vehicles.

Milstar II IOT&E milestones changed to reflect availability of Titan IV/Centaur and Launch Complex to support manifested launch dates.

c. (U) Current Change Explanations --

(Ch-1) Changes reflect revised testing strategy in DAE approved Acquisition Program Baseline (APB) dated 6 Feb 95.

(Ch-2) Advanced EHF MS I deleted in the Current Estimate due to 17 Jan 95 DAE decision to exclude Advanced MILSATCOM from the Milstar baseline.

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

CP Terminals

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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			
Start	APR 93	FEB 94	FEB 94 (Ch-1)
Complete	SEP 93	JUN 94	JUN 94 (Ch-1)

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9a. (U) Schedule (Cont'd):
CP Terminals

(U) Milestones (Cont'd) --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milstar I Phase 1 IOT&E			
Start	OCT 93	AUG 94	AUG 94 (Ch-1)
Complete	APR 94	SEP 95	SEP 95 (Ch-1)
Dedicated Asset Test			
Start	N/A	AUG 94	AUG 94
Complete	N/A	SEP 94	SEP 94 (Ch-1)
Milstar I Phase 2 IOT&E			
Start	NOV 94	MAR 96	MAR 96
Complete	MAR 96	SEP 96	SEP 96
IOC I	MAR 96	JAN 97	JAN 97
IOC II	OCT 00	OCT 00	OCT 00
Organic Support Capability	DEC 00	DEC 00	DEC 00
FOC	DEC 04	DEC 04	DEC 04

Acronyms & Abbreviations:

CDR - Critical Design Review
DT&E - Developmental Test and Evaluation
FOC - Full Operational Capability
IOC - Initial Operational Capability
IOT&E - Initial Operational Test and Evaluation
MS - Milestone

b. (U) Previous Change Explanations --

Satellite 1 On-Orbit DT&E and Milstar I Phase 1 and Phase 2 IOT&E milestones delayed due to an Aug 92 launch failure of a Centaur upper stage on an Atlas launch vehicle which impacted the planned launch of the first Development Flight Satellite (DFS-1, now Sat-1).

Milstar I Phase 2 IOT&E milestones changed due to planned AFB revisions.

IOC II milestone changed due to \$180M budget reduction in the FY1994 President's Budget.

New Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E testing milestones replaced Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E Start/Complete milestones.

Milstar I Phase 2 IOT&E Start/Complete and IOC I milestones changed to reflect change in DFS-2 launch manifest date.

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9c. (U) Schedule (Cont'd):
CP Terminals

c. (U) Current Change Explanations --

(Ch-1) Changes reflect revised testing strategy in DAE approved Acquisition Program Baseline (APB) dated 6 Feb 95.

d. (U) References --

(U) Production Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

10. (U) Performance Characteristics:
Satellites

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Polar				
Coverage	65N-90N	65N-90N / 65N-90N	65N-90N	65N-90N
Hrs/day	24	24 / 16	16	16
Capacity Payload				
Uplink	TBD	TBD / TBD	TBD	TBD
Downlink	TBD	TBD / TBD	TBD	TBD
Crosslink	TBD	TBD / TBD	TBD	TBD
UMF	TBD	TBD / TBD	TBD	TBD
Anti-jam Capability	TBD	TBD / TBD	TBD	TBD
Scintillation Protection	TBD	TBD / TBD	TBD	TBD
Mid Latitude				
Coverage	65S-65N	65S-65N / 65S-65N	65S-65N	65S-65N
LDR				
Hrs/day	24	24 / 24	24	24
Capacity/Payload (Kbps)				
Uplink	315	315 / 225	240	240
Downlink	485	485 / 340	500	500
Crosslink	170	170 / 115	130	130
MDR				
Hrs/day	24	24 / 24	24	24
Capacity/Payload	1 WSA & +1 ECA & +3 MSA & +4 LSA	1 WSA & +1 ECA & +3 MSA & +4 LSA	/ 1 WSA & +3 MSA	1 WSA & +3 MSA

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10a. (U) Performance Characteristics (Cont'd):

Satellites

	<u>DE</u>	<u>Approved</u> <u>Program</u> <u>Objective/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Uplink (Mbps)	57	57 / 43	57.399	57.399
WSA	40	40 / 30	30	30
MSA	12	12 / 6	6	6
Downlink (Mbps)	76	76 / 38	39.68	39.68
Crosslink (Mbps)	6.3	6.3 / 3.2	5	5
Antijam Capability				
LDR: (EIRP, dBW)				
Uplink: (Q-band)				

(b)(1)

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MILSTAR, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):
Satellites

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
LDR UHF Compati- bility	AFSATCOM FLTBCDST	AFSATCOM / FLTBCDST	AFSATCOM FLTBCDST	AFSATCOM FLTBCDST	AFSATCOM FLTBCDST
Capacity (links @ bps)	4 @ 75 & 1 @ 1200	4 @ 75 & / 1 @ 1200	4 @ 75 & 1 @ 1200	4 @ 75 & 1 @ 1200	4 @ 75 & 1 @ 1200
LDR Interoperability	MIL-STD 1582C MJCS1-87	MIL-STD / 1582C MJCS1-87	MIL-STD 1582C MJCS1-87	MIL-STD1 582CMJCS 1-87	MIL-STD1 582CMJCS 1-87
MMD (months)					
LDR	84	84 /	84	84	84
MDR	84	84 /	84	84	84
Constellation					
Control Stations					
R&M (MCE + Fixed CP) (hrs)					
MTBCF (hrs)	221	221 /	221	297	297
MTTRF (hrs)	1.0	1.0 /	1.0	1.0	1.0
Satellite Design Weight (lbs)	10000	N/A /	N/A	N/A	N/A (Ch-2)
Milstar I Weight (lbs)	N/A	TitanIV/ Centaur compati- ble	TitanIV/ Centaur compati- ble	TitanIV/ Centaur compati- ble	TitanIV/(Ch-2) Centaur compati- ble
Milstar II Weight (lbs)	N/A	TitanIV/ Centaur compati- ble	TitanIV/ Centaur compati- ble	TitanIV/ Centaur compati- ble	TitanIV/(Ch-2) Centaur compati- ble

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

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MILSTAR, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

Satellites

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
UHF - Ultra High Frequency
WSA - Wide Service Area

b. (U) Previous Change Explanations --

(b)(1)

c. (U) Current Change Explanations --

(Ch-1) Mobile and Airborne LDR Antijam Capability separately specified in the revised Acquisition Program Baseline (APB) dated 6 Feb 95. Therefore, the Mobile/Airborne LDR Antijam Capability parameter is no longer applicable.

(Ch-2) Milstar I/Milstar II Weight separately specified in the revised APB. Therefore, the Satellite Design Weight parameter is no longer applicable.

Note: Polar performance parameters are TBD pending refinement of requirements for Milstar adjunct per JROCM-072-92, 26 Aug 92 and CVAF Memo, Joint Milstar Satellite Communication System, 4 Sep 92.

d. (U) References --

(U) Development Estimate:

DAB approved Acquisition Program Baseline dated October 28, 1992.

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MILSTAR, December 31, 1994

10d. (U) Performance Characteristics (Cont'd):
Satellites

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

CP Terminals

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------------------	------------	---	------------------------------------	-----------------------------

Antijam Capability

LDR: (EIRP, dBW)

Uplink: (O-band)

(b)(1)

LDR UHF Compatibility	AFSATCOM FLTBD CST SCT	AFSATCOM / SCT	AFSATCOM SCT	AFSATCOM SCT	AFSATCOM SCT
Capacity (Links @ bps)	4 @ 75 & 1 @ 1200	4 @ 75 / 4 @ 75	4 @ 75 1 @ 1200	4 @ 75 1 @ 1200	4 @ 75 1 @ 1200
LDR Interoperability	MIL-STD 1582C MJCS1-87	MIL-STD / 1582C MJCS1-87	MIL-STD 1582C MJCS1-87	MIL-STD 1582C MJCS1-87	MIL-STD 1582C MJCS1-87
R&M					
MTBCF (hrs)	175	175 / 175	175	175	175
MTTRF (hrs)	1.0	1.0 / 1.0	1.0	1.0	1.0

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Current Estimates for Mobile/Airborne Downlink LDR Antijam Capability and LDR Scintillation Protection were incorrectly left

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MILSTAR, December 31, 1994

10c. (U) Performance Characteristics (Cont'd):

CP Terminals

blank in the Dec 93 SAR.

d. (U) References --

(U) Production Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

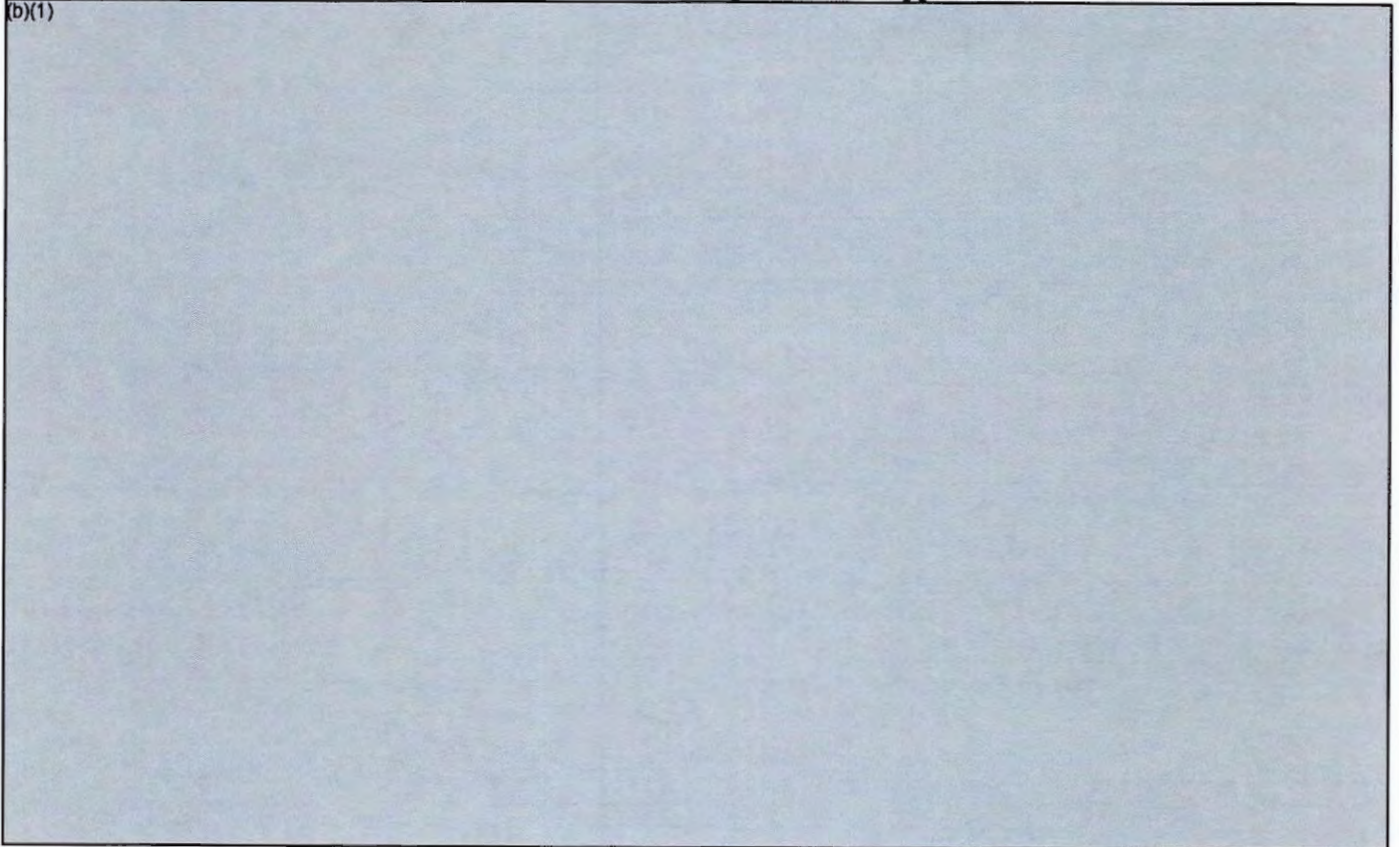
(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
Satellites

Development Approved Current

(b)(1)



Note: All satellites are being procured with RDT&E funding.
Procurement funding is for Mission Control Segment support equipment.

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MILSTAR, December 31, 1994

11d. (U) Total Program Cost and Quantity (Cont'd):
Satellites

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

CP Terminals

Production Approved Current

(b)(1)



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MILSTAR, December 31, 1994

11c. (U) Total Program Cost and Quantity (Cont'd):
CP Terminals

- c. (U) Foreign Military Sales/International Cooperative Programs -- None.
- d. (U) Nuclear Costs -- None.
- e. (U) References --

(U) Production Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

12. (U) Unit Cost Summary:

Satellites

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 95 APB)	<u>Percent</u> <u>Change</u>
(b)(1)			

b. (U) Procurement

(1) Cost (BY90\$)	35.3	39.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

Note: Per 1993 Defense Planning Guidance resulting from the SECDEF's Bottom-Up Review, the Milstar II program will terminate after Satellite 6 and transition to a lower cost Advanced EHF satellite with first launch no later than FY06. As a result of this direction, the Milstar II program will no longer build production satellites (8 through 11). Consequently, procurement unit cost is not applicable to the Milstar space segment.

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12. (U) Unit Cost Summary (Cont'd):

CP Terminals

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 95 APB)	<u>Percent</u> <u>Change</u>
(b)(1)			

b. (U) Procurement

(1) Cost (BY90\$)	919.1	900.4	
(2) Quantity	87	87	
(3) Unit Cost	10.564	10.349	2.077

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MILSTAR, December 31, 1994

13. (U) Cost Variance Analysis:
Satellites

(b)(1)



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MILSTAR, December 31, 1994

13a. ~~Cost~~ Cost Variance Analysis (Cont'd):
Satellites

(b)(1)



b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
Quantity: DFS-7 deleted and 5 Advanced EHF satellites added.
Engineering: Technology Insertion associated with production satellites deleted.
Estimating: DFS-4 delivery delayed due to budget reductions and Advanced MILSATCOM Technology Program added.
Support: 2nd Fixed Mission Control Site deleted.

Procurement

Economic: Revised escalation indices.
Quantity: Milstar II production satellites 8-11 deleted.

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MILSTAR, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

Satellites

Estimating: Reallocation of funding from Milstar to DSCS.
Support: Milstar Mobile Constellation Control Station
(MMCCS) and Satellite Mission Control Subsystem
(SMCS) requirements reduced.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices (Economic)	N/A	-52.0
Economic Adjustment for Negative Program Change (Economic)	N/A	+52.4
Removal of the 5 Advanced EHF satellites from Milstar baseline (Quantity)	-3313.8	-5180.2
Streamlined Program savings (Schedule)	-123.8	-176.7
Adjustment for Current & Prior Year Inflation (Estimating)	+6.4	+7.5
Removal of Advanced MILSATCOM technology program from Milstar baseline (Estimating)	-85.5	-107.6
Delete Milstar Training Augmentation Device (MTAD) and Mission Planning Element (MPE) Phase IIB (Estimating)	-21.2	-26.1
Increased risk for Satellites 3M and 4 due to program funding reductions (Estimating)	-62.0	-76.6
Reduction in Flight/Ground Software maintenance and program support requirements (FY95-11) (Estimating)	-171.3	-210.3
RDT&E Subtotal	<u>-3771.2</u>	<u>-5769.6</u>
(2) <u>Procurement</u>		
Revised economic escalation indices (Economic)	N/A	--
Revised estimate for Satellite Mission Control Subsystem (SMCS) spares (Support)	+2.3	+2.9

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MILSTAR, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):
Satellites

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduction in Mission Planning Element (MPE) and Milstar Mobile Constellation Control Station (MMCCS) requirements (Support)	-5.9	-7.3
Procurement Subtotal	<u>-3.6</u>	<u>-4.4</u>

CP Terminals

(b)(1)



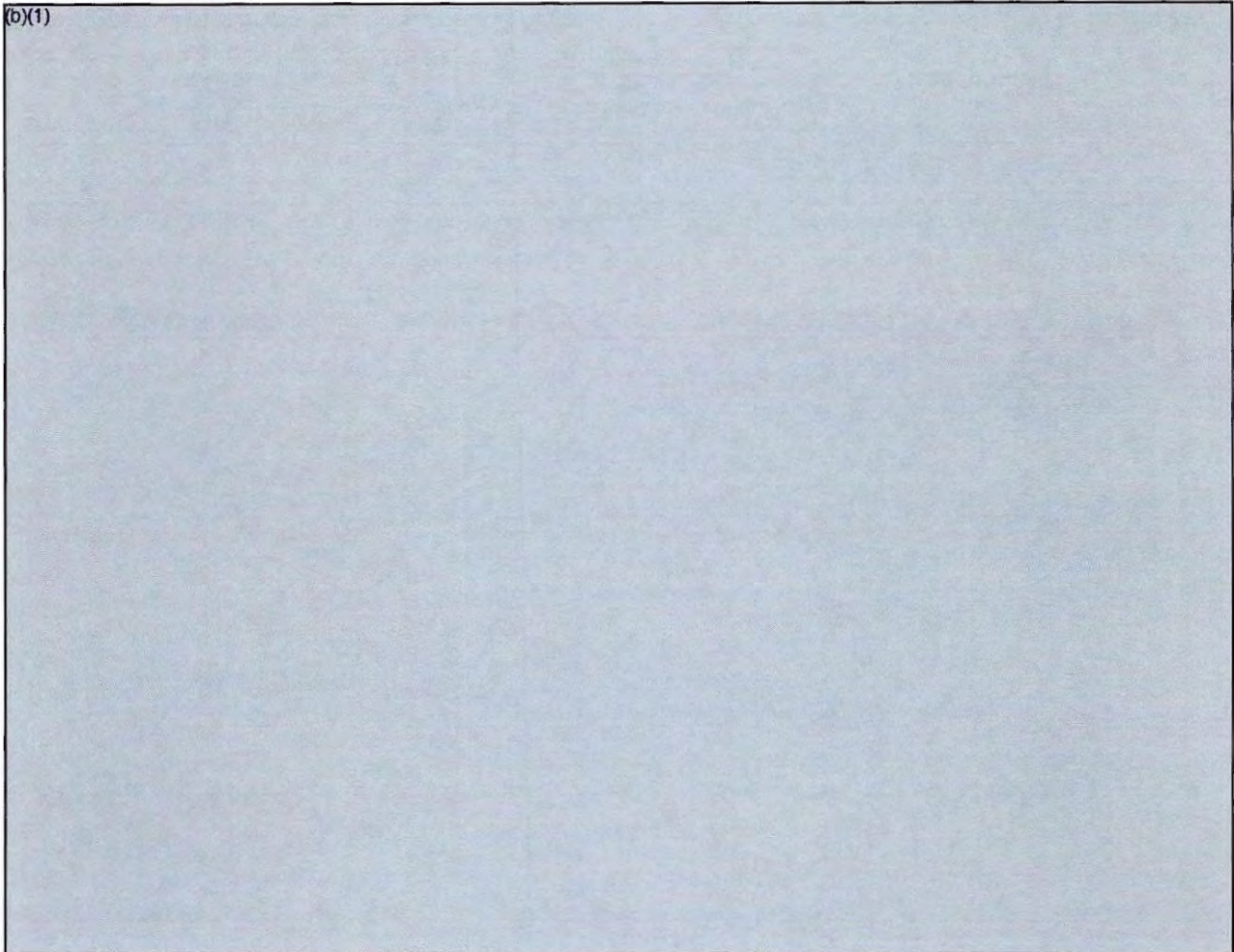
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MILSTAR, December 31, 1994

13a. ~~13a.~~ Cost Variance Analysis (Cont'd):
CP Terminals

(b)(1)



b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
Estimating: Command post terminal (CPT) requirements changed to allow CPT to process at a medium data rate.
Revised estimate for E-4 Airborne Command Post Terminal radomes, Milstar Air Force Terminal Remoting Subsystem, and Low Cost Terminal.

Procurement

Economic: Revised escalation indices.
Quantity: Reduction of 3 Navy terminals, from 11 to 8 terminals and addition of 6 Navy terminals from 8

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MILSTAR, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

CP Terminals

to 14. Reduction of 5 Air Force CP Terminals from 93 to 88 terminals and additional reduction of 15 Air Force CP Terminals from 88 to 73.

Estimating: Revised estimate for terminal segment.

Support: Adjustment for current and prior inflation.
Revised estimate to build Command Post Terminal shelters.

MILCON

Economic: Revised escalation indices.

Estimating: Revised number of permanent bases to two and terminal installation delayed due to budget reduction.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices (Economic)	N/A	-1.6
Economic Adjustment for Negative Program Change (Economic)	N/A	-6.8
Adjustment for Current & Prior Year Inflation (Estimating)	+0.4	+0.5
Reduced SPO operations and contractor support estimate as development effort ramps down (Estimating)	-55.5	-85.9
Eliminated Consulting Services support in FY96-99 (Estimating)	-7.7	-9.4
Revised estimate due to Small Business Innovative Research (SBIR) reduction (Estimating)	-1.4	-1.6
Realigned to procurement (3080) to cover shortfall in spares (Estimating)	-8.7	-10.6
Process Action Paper (PAP) 56 Initiative to realign program support to procurement (Estimating)	-7.3	-9.1
 RDT&E Subtotal	 -80.2	 -124.5
(2) <u>Procurement</u>		
Reclassification of Flyaway costs to Other Weapon Support costs from Dec 92 SAR (Support)	+275.3	+330.2

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MILSTAR, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):
CP Terminals

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reclassification of Flyaway costs to Other Weapon Support costs in the Dec 92 SAR (Estimating)	-275.3	-330.2
Revised economic escalation indices (Economic)	N/A	-1.9
Revised estimate to complete procurement of radomes (Estimating)	+0.3	+0.3
Adjustment for Current & Prior Year Inflation (Estimating)	-0.2	-0.6
Additional support to complete procurement of radomes (Support)	+0.9	+1.0
Additional Army spares purchase (Support)	+4.6	+5.3
Reinstated funding for E-4 terminals and spares (Support)	+15.6	+20.9
Revised estimate for CP Terminal shelters (Support)	-2.5	-2.9
Procurement Subtotal	+18.7	+22.1
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	+0.2
Adjustment for Current & Prior Inflation. (Estimating)	-0.1	-0.1
Excess funds removed during MILCON cleanup (Estimating)	-0.9	-1.1
MILCON Subtotal	-1.0	-1.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

Satellites

(b)(1)

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MILSTAR, December 31, 1994

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

CP Terminals

(b)(1)

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --	Initial Contract Price		
(U) <u>Milstar II Satellites:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Msl & Space Co, Sunnyvale, CA			
F04701-92-C-0049, CPAF	\$1659.5	N/A	1
Award: October 30, 1992			
Definitized: October 30, 1992			
Current Contract Price	Estimated Price At Completion		
<u>Target</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$3747.3	\$3746.4	\$3746.4	
<u>Ceiling</u>			
N/A			
<u>Qty</u>			
4			
	<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances	\$0.2	\$-11.9	
Cumulative Variances To Date (12/31/94)	\$5.5	\$-8.6	
Net Change	\$5.3	\$3.3	

Explanation of Change:

Cost variance improved from \$0.2M to \$5.5M which represents a 1% underrun. Low Data Rate (LDR) payload manufacturing efficiencies are offsetting unfavorable Medium Data Rate (MDR) payload performance. Unfavorable MDR performance is driven by overhead rate growth at a major subcontractor.

Schedule variance improved from -\$11.9M to -\$8.6M but remains unfavorable at -1.2%. Unfavorable schedule variance is due to development of MDR Nuller Subsystem and LDR Radio Frequency Subsystem, late delivery of LDR material, and manufacturing delays associated with the Data Handling Module and the Electrical Power Distribution Subsystem. There is no schedule risk to hardware delivery or satellite launch availability associated with this variance.

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15. (U) Contract Information (Cont'd):

Current Contract Target Price increased by \$2.1B from the Dec 93 SAR.

This increase is due to addition of satellites 3M, 5 and 6 to the Milstar II contract.

Net changes: There is no impact to the contract or to the program.

b. (U) Procurement --

(U) <u>CP Production Terminals:</u>	<u>Target</u>	<u>Initial Contract Price</u> <u>Ceiling</u>	<u>Qty</u>
Raytheon, Malborough, MA			
F19628-93-C-0032, FFP	\$74.0	N/A	20
Award: May 28, 1993			
Definitized: May 28, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$97.5	N/A	20	\$97.5	\$97.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Current Contract Target Price increased from \$74.0M to \$97.5M to reflect Survivability/Vulnerability Level Reduction modification and procurement of spares and additional equipment.

(U) <u>CP Production Terminals:</u>	<u>Target</u>	<u>Initial Contract Price</u> <u>Ceiling</u>	<u>Qty</u>
Rockwell, Richardson, TX			
F19628-93-C-0033, FFP	\$111.3	N/A	24
Award: May 28, 1993			
Definitized: May 28, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$115.3	N/A	24	\$115.3	\$115.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Current Contract Target Price changed from \$111.3M to \$115.3M due to addition of Traveling Wave Tube, Task Requirement Notices, and Additional Radome modifications.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

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MILSTAR, December 31, 1994

16b. (U) Program Funding Summary (Cont'd):
Satellites

(b)(1)



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MILSTAR, December 31, 1994

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				814.5	915.5	915.5	868.9	2.7
1994				720.6	827.2	806.5	424.3	2.0
1995				495.6	585.3	150.6	41.0	2.7
1996				534.3	649.7			3.0
1997				594.6	745.0			3.0
1998				544.8	703.4			3.0
1999				475.4	631.8			2.9
2000				280.4	383.8			3.0
2001				101.2	142.7			3.0
2002				61.5	89.3			3.0
2003				46.1	68.9			3.0
2004				20.8	32.0			3.0
2005				18.3	29.1			3.0
2006				14.1	23.1			3.0
2007				12.6	21.3			3.0
2008				11.7	20.3			3.0

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16c. (U) Program Funding Summary (Cont'd):
Satellites

Piscal 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 (Cont'd)

2009				10.4	18.5			3.0
2010				9.0	16.5			3.0
2011				8.4	16.0			3.0

(b)(1)

The FY92 line includes FY92 and prior year information.

Expenditure and obligation data reflect program office records as of
31 Jan 95.

Appropriation: 3080 Other Procurement, Air Force

1992				7.5	8.5	8.5	1.8	3.1
1993								2.0
1994				25.7	30.4	28.5	7.8	2.0
1995				0.5	0.6	0.6		2.7
1996				0.7	0.9			3.0
1997				0.5	0.6			3.0
1998				0.3	0.4			3.0
1999				0.1	0.1			3.0
Subtot				35.3	41.5	37.6	9.6	

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MILSTAR, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

(b)(1)

Expenditure and obligation data reflect program office records as of
31 Jan 95.

c. (U) Annual Summary -- CP Terminals

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

1992				2.3	2.6	2.6	0.4	3.1
1993				1.8	2.1	2.1	0.3	2.0
1994				0.5	0.6	0.6	0.1	2.0
Subtot				4.6	5.3	5.3	0.8	
Army				4.6	5.3	5.3	0.8	

Expenditure and obligation data reflect program office records as of
31 Jan 95.

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MILSTAR, December 31, 1994

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	Obli- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy

1992	8		15.5	29.9	34.3	34.3	15.1	2.4
1993	6		11.7	11.7	13.7	13.7	6.0	1.9
1994				0.2	0.2	0.2		2.0
Subtot	14		27.2	41.8	48.2	48.2	21.1	
Navy	14		27.2	41.8	48.2	48.2	21.1	

Expenditure and obligation data reflect program office records as of
31 Jan 95.

Appropriation: 3600 Research, Development, Test + Eval, AF

(b)(1)

1993				109.0	122.5	122.5	73.3	2.7
1994				65.9	75.7	54.9	19.8	2.0
1995				15.0	17.7	13.8	2.8	2.7
1996				35.0	42.6			3.0
1997				7.1	8.9			3.0
1998				7.0	9.1			3.0
1999				6.3	8.4			2.9
2000				6.4	8.7			3.0

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MILSTAR, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2001				6.4	9.0			3.0
2002				0.9	1.3			3.0
2003				0.9	1.3			3.0
2004				0.8	1.3			3.0
2005				0.8	1.3			3.0
2006				0.8	1.3			3.0
2007				0.8	1.3			3.0
2008				0.7	1.3			3.0
2009				0.7	1.3			3.0
2010				0.7	1.3			3.0
2011				0.7	1.3			3.0

(b)(1)

The FY92 line includes FY92 and prior year information.

Approximately \$26M TY in FY89-96 funding is for Classified Host requirements. Approximately \$41M TY in FY83-97 funding is for Dual Modem Upgrades.

Expenditure and obligation data reflect program office records as of 31 Jan 95.

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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	Obli- gated	Ex- pended	

Appropriation: 3010 Aircraft Procurement, Air Force

1983				0.6	0.5	0.5	0.5	6.0
1984								4.3
1985				10.8	9.6	9.6	9.6	3.1
1986				20.5	18.9	18.9	18.9	3.7
1987	3	3.7	45.3	66.0	63.4	63.4	50.8	4.0
1988	1		8.4	9.1	9.2	9.2	7.5	5.0
1989	4		24.7	42.3	44.1	44.1	31.3	3.3
1990	3	0.6	17.0	42.5	45.7	45.7	18.9	3.2
1991	2	1.9	11.5	14.4	16.1	16.1	14.5	4.1
1992								2.4
1993	1		2.6	14.6	17.0	9.9	1.2	1.9
1994								2.0
1995				7.5	9.3			2.7
1996				0.6	0.7			3.0
1997				0.8	1.0			3.0
Subtot	14	6.2	109.5	229.7	235.5	217.4	153.2	

FY 83-86 funding reflects the Dual Modem and ARC 171 A/H Radio Upgrades.

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16c. (U) Program Funding Summary (Cont'd):

CP Terminals

Expenditure and obligation data reflect program office records as of
31 Jan 95.

Appropriation: 3080 Other Procurement, Air Force

1983				1.2	1.0	1.0	1.0	3.9
1984								2.9
1985				12.4	11.0	11.0	11.0	3.4
1986								4.3
1987								3.8
1988								3.7
1989	7		39.1	91.4	94.5	89.7	87.4	3.6
1990	6		48.5	73.2	78.0	73.5	67.4	3.0
1991	17		123.3	180.1	196.8	193.5	183.8	2.6
1992	29		70.0	163.6	184.4	184.4	81.4	3.1
1993				59.0	67.8	48.0	8.0	2.0
1994				34.3	40.6	19.4	2.8	2.0
1995				4.0	4.9	0.3		2.7
1996				13.7	17.2			3.0
1997				5.0	6.4			3.0
1998				3.2	4.3			3.0
1999				1.2	1.7			3.0
2000				0.4	0.5			3.0
2001				0.3	0.5			3.0
Subtot	59		280.9	643.0	709.6	620.8	442.8	

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16c. (U) Program Funding Summary (Cont'd):

CP Terminals

Approximately \$29M TY in FY83-95 funding is for Dual Modem and ARC
171 A/H Radio Upgrades.

Expenditure and obligation data reflect program office records as of
31 Jan 95.

Appropriation: 3300 Military Construction, Air Force

1989				4.9	5.0	5.0	5.0	3.7
1990				0.3	0.3	0.3	0.3	5.8
1991				1.9	2.1	2.1	2.1	2.9
1992				11.0	12.4	12.4	12.4	1.9
1993								2.8
1994				1.8	2.2	2.2	2.2	2.0
1995								2.7
1996				0.6	0.8			3.0
Subtot				20.5	22.8	22.0	22.0	

(b)(1)

Expenditure and obligation data reflect program office records as of
31 Jan 95.

17. (U) Production Rate Data:

Satellites

- a. (U) Deliveries (Plan/Actual) --
- | | To Date |
|-------------|---------|
| RDT&E | 1/1 |
| Procurement | 0/0 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

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17a. (U) Production Rate Data (Cont'd):
CP Terminals

a. (U) Deliveries (Plan/Actual) --	<u>To Date</u>
RDT&E	27/27
Procurement	43/43

b. (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 software. A constellation consists of four satellites. Support costs are derived from the 25 Aug 92 Program Life Cycle Cost Estimate (PLCCE).

There is no antecedent for this system.

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

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18a. (U) Operating and Support Costs (Cont'd):

CP Terminals

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 all command post terminals is two-level. Support costs are derived from the Sep 92 Terminal program office estimate.

There is no antecedent for this system.

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.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: AOE 6 SUPPORT SHIP

AS OF DATE: December 31, 1994

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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 (PMS325) CAPT R.E. Williams USN
Zachary Taylor Building (NC#3) Assigned: September 14, 1994
2531 Jefferson Davis Highway AV 332-3507 COMM (703) 602-3507
Arlington, VA 22242-5160

4. Program Elements/Procurement Line Items:

ROD&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

5. Related Programs:

None.

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AS AMENDED
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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

95-C-0304
1995

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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 an 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 an option-type (one-plus-three), fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option for the first follow ship (AOE 7) was exercised on 3 NOV 88 and for the second (AOE 8) on 6 DEC 89; the third option was allowed to lapse.

As a result of the FY 92 Congressional Budget, the AOE 6 Class Program was reduced from 7 to 4 ships; the FY91 ship (AOE 9) was rescinded and a FY93 ship (AOE 10) was added. A competitive contract for detail design and construction of the AOE 10 was awarded to NASSCO on 15 JAN 93. The award was a fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option to build the AOE 10 Reversing Reduction Gears (RRG) was also exercised with Cincinnati Gear Company on 15 JAN 93. Construction of the AOE 10 commenced on 16 SEP 93.

In MAY 91, the FY91 Dire Emergency Supplemental Appropriations Act provided the AOE 6 Class Program with \$237.0M to complete the three ships under contract at NASSCO. These funds were required to cover cost growth and claims associated with shipbuilder overruns. Due to these additional funds, the Program Acquisition Unit Cost (PAUC) increased by 30% requiring a Nunn-McCurdy Unit Cost Breach Report. On 12 DEC 91, USD(A) certified the AOE 6 program to Congress.

NASSCO submitted certified claims for \$460.0M. A settlement

AOE 6 SUPPORT SHIP, December 31, 1994

7a. Program Highlights (Cont'd):

modification was executed with available funding on 26 DEC 91 for \$239.0M. The majority of claims entitlement was due to the late delivery of Government furnished RRGs resulting in a loss of learning and inefficiencies due to the larger workforce required.

In JAN 93, a fifth ship (AOE 11) was added to the program with a sixth ship in the out-years, increasing the program to 6 ships. In JAN 94, the FY94 Congressional Budget dropped the last two ships restoring the program to 4 ships.

AOE 6 successfully completed Acceptance Trials during the week of 13-17 DEC 93.

b. Significant Developments Since Last Report --
In the summer of 1992, the contract with National Steel Company's (NASSCO) production labor personnel expired; shipyard personnel continue to work without a union agreement.

AOE 6 was delivered on 31 JAN 94 and commissioned USS SUPPLY (AOE 6) on 26 FEB 94.

AOE 7 successfully completed Acceptance Trials during the week of 11-15 JUL 94. The ship was delivered on 25 AUG 94.

This system will satisfy mission requirements.

c. Changes Since As Of Date --
AOE 7 was commissioned USS RAINIER (AOE 7) on 21 JAN 95.

AOE 8 successfully completed Builder's Sea Trial during the week of 17-21 JAN 95.

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 --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
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

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
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	DEC 93
Delivery - 1st Ship	APR 91	OCT 93	JAN 94
Organic Support Capability Date	N/A	NOV 94	FEB 95
Service Depot Support Date	N/A	NOV 94	FEB 95
Initial Operational Capability	AUG 91	FEB 95	MAY 95
Last AOE Delivery	FEB 98	DEC 04	OCT 97

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. The delay from FEB 93 to AUG 93 was due to the 25-day general labor strike and the status of remaining production and engineering work. The delay from AUG 93 to OCT 93 was due to high rates of rework and labor unrest. The delay from OCT 93 to DEC 93 was due to the need to reconduct Builder's Sea Trials.

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. The delay from APR 93 to OCT 93 was due to the delay in Acceptance Trials. The delay from OCT 93 to JAN 94 was due to the delay in Acceptance Trials.

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.

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9b. Schedule (Cont'd):

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. The delay from MAY 93 to FEB 95 was due to the delay in delivery of AOE 6. The delay from NOV 93 to FEB 95 was due to the delay in AOE 6 delivery.

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. The delay from APR 97 to OCT 04 was due to the addition of a sixth ship in the outyears. The change from DEC 04 to OCT 97 was due to the reduction of the program from six to four ships.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

NDCP Approved March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

Approved Program:

NAE Approved Acquisition Program Baseline dated April 08, 1993.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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+	20+
Armament					
NSSMS	1	1	/ 1	1	1
CIWS	2	2	/ 2	2	2

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AOE 6 SUPPORT SHIP, December 31, 1994

10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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 March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

Approved Program:

NAE Approved Acquisition Program Baseline dated April 08, 1993.

11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	29.4	35.2	31.2
Procurement	2303.1	2859.8	1919.3
Ship Construction	(2230.6)		(1844.3)
OF/PD	(72.5)		(0.0)
Post Delivery			(25.0)
Outfitting			(50.0)
Total Sailaway	(2303.1)		(1919.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	124.2	46.3
Ops. and Maint. (O&M)	0.0	0.0	0.4
Total FY 86 Base-Year \$	2332.5	3019.2	1997.2

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11a. Total Program Cost and Quantity (Cont'd):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	502.3	735.2	348.1
Development (RDT&E)	(-0.6)	(1.3)	(-0.3)
Procurement	(502.9)	(673.8)	(332.5)
Construction (MILCON)	(0.0)	(59.6)	(15.8)
Ops. and Maint. (O&M)	(0.0)	(0.5)	(0.1)
Total Then-Year \$	2834.8	3754.4	2345.3

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	$\frac{7}{7}$	$\frac{6}{6}$	$\frac{4}{4}$
Total			

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

NDCP Approved March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

Approved Program:

NAE Approved Acquisition Program Baseline dated April 08, 1993.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (APR 93 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY86\$)	1997.2	3019.2	
(2) Quantity	4	6	
(3) Unit Cost	499.30	503.20	-0.78

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AOE 6 SUPPORT SHIP, December 31, 1994

12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY86\$)	1919.3	2859.8	
(2) Quantity	4	6	
(3) Unit Cost	479.83	476.63	0.67

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AOE 6 SUPPORT SHIP, December 31, 1994

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	ROD&E	PROC	MILCON	O&M	TOTAL
Production Estimate	28.8	2806.0	0.0	0.0	2834.8
Previous Changes:					
Economic	-	+65.8	-3.4	-	+62.4
Quantity	-	-1222.3	-	-	-1222.3
Schedule	-	+70.5	-	-	+70.5
Engineering	-	-	-	-	-
Estimating	+2.5	+441.3	+86.1	+0.5	+530.4
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+2.5	-644.7	+82.7	+0.5	-559.0
Current Changes:					
Economic	-	7.0	0.6	-	+7.6
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-0.4	83.5	-21.2	-	+61.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-0.4	+90.5	-20.6	-	+69.5
Total Changes	+2.1	-554.2	+62.1	+0.5	-489.5
Current Estimate	30.9	2251.8	62.1	0.5	2345.3

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AOE 6 SUPPORT SHIP, December 31, 1994

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	-	-865.3	-	-	-865.3
Schedule	-	+56.6	-	-	+56.6
Engineering	-	-	-	-	-
Estimating	+2.1	+356.2	+59.9	+0.4	+418.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+2.1	-452.5	+59.9	+0.4	-390.1
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-0.3	68.7	-13.6	-	+54.8
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-0.3	+68.7	-13.6	-	+54.8
Total Changes	+1.8	-383.8	+46.3	+0.4	-335.3
Current Estimate	31.2	1919.3	46.3	0.4	1997.2

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Increase in engineering development costs; Current and prior inflation offset; Revised engineering development costs for AOE 10 ship contract design; Revised estimate to complete contract design.

Procurement

Economic: Revised economic escalation indices; Economic adjustment for negative program change.

Quantity: Change in program: 7 to 4 ships; 4 to 6 ships.

Schedule: Change in acquisition strategy: from 1-1-0 to 1-0-1 (FY90 to FY92).

13b. Cost Variance Analysis (Cont'd):

Estimating: Repricing based on prior year ship costs; Current and prior inflation offset; Congressional reductions to FY 1992 program; Reclassification of support variance to estimating variance to reflect outfitting and post delivery as sailaway.

Support: Decrease in estimated outfitting and material costs; Increase in outfitting material costs and post delivery allowance for shock tests; Reclassification of support variance to estimating variance to reflect outfitting and post delivery as sailaway.

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.

Q & M

Estimating: MILCON Planning/Design and Site Survey Studies.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RODT&E</u>		
Revised contract design estimate (Estimating)	-0.3	-0.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+7.0
Adjustment for Current & Prior Inflation. (Estimating)	-6.0	-7.2
Revised program estimate as a result of repricing based on prior year ship costs. (Estimating)	+74.7	+90.7
Procurement Subtotal	+68.7	+90.5
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Economic Adjustment for Negative Program Change. (Economic)	N/A	+1.1
Adjustment for Current & Prior Inflation. (Estimating)	+0.1	+0.1

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AOE 6 SUPPORT SHIP, December 31, 1994

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised homeport requirements estimate. (Estimating)	-13.7	-21.3
MILCON Subtotal	-13.6	-20.6

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
404.97	17.50	-1.85	17.63	--	148.07	--	--	181.35	586.33

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --			Initial Contract Price		
AOE 6/7/8:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NASSCO, San Diego, CA			\$281.5	\$319.9	1
N00024-87-C-2002, FPI					
Award: January 23, 1987					
Definitized: January 23, 1987					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$972.5	\$1093.4	3	\$1093.4	\$1093.4	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (10/09/94)			\$-80.5	\$-12.8	
Net Change			\$-94.5	\$-8.6	
			\$-14.0	\$4.2	

Explanation of Change:

The Cumulative and the Previous Cumulative Variances reported in this SAR reflect the AOE 6/7/8. Both AOE 6 and 7 have been delivered.

The COST and SCHEDULE variances for the AOE 8 continue to be impacted by labor costs and overhead with labor as the larger contributor due to production inefficiencies. As the AOE 8 draws closer to delivery the SCHEDULE variance will continue to improve.

AOE 6 SUPPORT SHIP, December 31, 1994

(b) (4)

AOE 101
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	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$359.7	\$415.8	1	\$366.3	\$370.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.8	\$-1.1
Cumulative Variances To Date (10/09/94)	\$-0.6	\$11.0
Net Change	\$3.2	\$12.1

Explanation of Change:

The cumulative COST and SCHEDULE variances continue to improve. Material is the major driver in the positive SCHEDULE variance, while the labor cost variance and the associated overhead cost variance are the major contributors to the cumulative COST variance.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 70.0% (14 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 98.0% (\$2298.0 / \$2345.3)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY82-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RD&E	30.9	-	-	-	30.9
Procurement	2220.5	7.5	12.7	11.1	2251.8
MILCON	46.1	6.9	-	9.1	62.1
O&M	0.5	-	-	-	0.5
Total	2298.0	14.4	12.7	20.2	2345.3

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Obligat- ed	Ex- pended	

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				0.9	1.0	1.0	1.0	4.0

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AOE 6 SUPPORT SHIP, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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
Subtot				31.2	30.9	30.6	30.6	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1987	1		642.6	557.2	603.7	511.3	495.1	1.5
1988								2.6
1989	1		423.7	348.5	399.9	368.9	348.2	3.3
1990	1		419.3	336.2	396.7	378.1	338.7	1.1
1991				195.8	238.0	238.0	238.0	1.6
1992				162.8	204.2	203.3	130.0	2.5
1993	1		433.7	286.9	364.5	275.7	39.6	3.2
1994				7.2	9.4	7.2	4.0	4.1
1995				3.0	4.1			2.7
1996				5.4	7.5			3.0
1997				8.9	12.7			3.0
1998				4.8	7.1			3.0
1999				2.6	4.0			3.0

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AOE 6 SUPPORT SHIP, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escal Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

Subtot	4		1919.3	1919.3	2251.8	1982.5	1593.6	
--------	---	--	--------	--------	--------	--------	--------	--

Appropriation: 1205 Military Construction, Navy

1991				16.1	20.0	14.4	14.4	4.3
1992				12.7	16.2	13.4	10.3	2.8
1993				1.6	2.1	0.9	0.6	2.7
1994								2.0
1995				5.6	7.8			2.7
1996				4.8	6.9			3.0
1997								3.0
1998								3.0
1999								3.0
2000								3.0
2001				5.5	9.1			3.0
Subtot				46.3	62.1	28.7	25.3	

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AOE 6 SUPPORT SHIP, December 31, 1994

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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	4		1919.3	1997.2	2345.3	2042.3	1650.0	

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

RD&E

Procurement

To Date

0/0

2/2

b. 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 and PCS costs are accounted for in Indirect Costs. Direct operating costs include the cost of fuel, repair parts, supplies, training expendable stores, and purchased services. Direct maintenance includes Intermediate and Depot Level Maintenance. Indirect costs include training, publications, ammunition handling, engineering/technical services support, retirement costs, and crew

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AOE 6 SUPPORT SHIP, December 31, 1994

18a. Operating and Support Costs (Cont'd):

PCS costs. The baseline AOE 1 and AOE 6 Class Operating and Support estimate is the VAMOSC actuals for the per ship average by class for the AOE 1-4 in constant FY86 dollars. The source data used to derive the estimates are an average of the FY93 Actuals, five-year maintenance cost averages, and the FY94 approved expenses.

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AOE 6 Class	Avg Annual Cost Per AOE 1 Class
Direct Personnel	12.3	12.5
Direct Operations	9.4	9.8
Direct Maintenance	11.6	11.6
Indirect Costs	5.1	5.1
Total	38.4	39.0

c. Contractor Support Costs -- None.

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A-17 LONGBOW APACHE

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11-43

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: LONGBOW APACHE

AS OF DATE: December 31, 1994

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1. (U) Designation and Nomenclature (Preferred Name):
LONGBOW APACHE

MAR 28 1995

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

ATTN: SPAE-AV-AAH
4300 GOODFELLOW BOULEVARD
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:

RD&E:

PE 23744 Project D423
PE 63776 Project D472
PE 64816 Project DC27, DC31, D2DT, DC87

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Robert C. Atwell
SECURITY

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~~Declassify on: Originating Agency Determination Required (OADR)~~
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Longbow Apache, December 31, 1994

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APFN 2031 ICN AA6605 (Army)
APFN 2031 ICN AA6607 (Army)
APFN 2031 ICN AA6608 (Army)
APFN 2031 ICN AA0978 (Army)

5. (U) Related Programs:

AH-64 Apache, Hellfire Modular Missile System (HMMS), and Longbow Hellfire.

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 (RF) autonomous seeker in an upgraded Hellfire missile (Longbow Hellfire). Longbow will provide the AH-64 with 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. A total of 227 aircraft will be modified with all of the Longbow improvements including the FCR and the 701-C engine integrated onto an AH-64 airframe. An additional 531 aircraft will be modified to incorporate all of the Longbow improvements except 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, which led to 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 Fire Control Radar to be integrated and tested on the AH-64 Apache. In 1981, an RF Seeker for Hellfire was added, 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. In August 1986, a Proof of Principle demonstration contract was awarded to the JV.

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Longbow Apache, December 31, 1994

7a. (U) Program Highlights (Cont'd):

Concurrently, the engineering development program was approved in the Army Acquisition Decision Memorandum (ADM) date July 20, 1989. This decision authorized integration of the Longbow Fire Control Radar onto four AH-64 prototype airframes.

In December 1990, an ADM was signed by the DAE to approve entry into Full Scale Development (FSD). In June 1991, the DAB directed that the Fire Control Radar, airframe, and missile contract efforts be aligned.

The Longbow prototype AH-64D aircraft, without a tactical Fire Control Radar, successfully completed its first flight in April 1992.

An Acquisition Program Baseline was signed in May 1993 to include an AH-64D model without the Fire Control Radar; that model will not include the 701-C engine.

In 1993, the Preliminary Airworthiness Evaluation and the Fire Control Radar Hardware and Software Critical Design Reviews were successfully completed. An AH-64D with an operating Fire Control Radar flew for the first time in August 1993.

b. (U) Significant Developments Since Last Report -- Many important testing and review activities were successfully completed during 1994. Among these accomplishments were the FCR Built In Test Demonstration (June); AH-64D Logistics Demonstration and Conversion Demonstration (June); FCR Contractor Mode Performance Demonstration (June); the final Production Readiness Review supporting long lead production (August); FCR Countermeasures tower testing (September); Force Development Test and Experimentation (December); Pre-Production Qualification Testing (December).

A successful Long Lead In-Process Review (IPR) was conducted for the Conventional Systems Committee (CSC) on October 5, 1994. This IPR resulted in approval for the Longbow aircraft and Fire Control Radar to obligate FY 95 Advance Procurement Funds, contingent upon Joint Requirements Oversight Council (JROC) approval of Longbow requirements. The JROC validated the revised key performance parameters on October 27, 1994. The Acquisition Decision Memorandum for long lead procurement was signed November 16, 1994. The Longbow long lead advance procurement contracts were signed with McDonnell Douglas Helicopter Systems and the Joint Venture in December 1994. The program is being evaluated relative to the FY 95 RDT&E and APA decrements and their impact on the program.

The Longbow Apache system is expected to satisfy mission requirements.

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Longbow Apache, December 31, 1994

7b. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --
The Gunnery Phase of Initial Operational Test and Evaluation (IOT&E) was successfully completed in February 1995. The final phase of IOT&E (Force-on-Force) will begin in March 1995.

8. (U) Threshold Breaches:

There are cost breaches to the Acquisition Program Baseline (APB) dated March 18, 1994. There are Program Acquisition Unit Cost and Average Unit Procurement Cost Nunn-McCurdy breaches which exceed 15 percent. A Program Deviation Report and a revised APB have been submitted. See sections 12c-m for additional data.

9. (U) Schedule:

Airframe Modifications

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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
Complete	MAR 93	MAR 93	JUN 93
LBA Initial Prod Readiness Rev	JUL 92	JUL 92	JUL 92
First Flight w/ Longbow	AUG 93	AUG 93	AUG 93

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Longbow Apache, December 31, 1994

9a. (U) Schedule (Cont'd):
Airframe Modifications

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Component Qualification	DEC 93	DEC 93	DEC 93
LBA Long Lead IPR	JAN 94	OCT 94	OCT 94
First Flight (AH-64D w/o FCR)	N/A	JAN 94	JAN 94
Long Lead Time Items Contract Award	APR 94	NOV 94	DEC 94 (Ch-1)
Development Test			
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
IOT&E			
Start	JAN 95	JAN 95	JAN 95
Complete	MAR 95	MAR 95	MAR 95
Milestone III (DAB)	NOV 95	NOV 95	OCT 95 (Ch-2)
Lot 1 Contract Award	NOV 95	NOV 95	NOV 95
First Production Delivery (LBA & FCR)	APR 96	JUN 97	MAR 97 (Ch-3)
Full Rate Production Contract Award (LBA & FCR)	NOV 96	N/A	N/A (Ch-4)
Full Rate Production Conversion Award (LBA)	NOV 96	N/A	N/A (Ch-4)
First Unit Equipped	FEB 97	N/A	OCT 97
Organic Spt for Intermed Level of Repair	FEB 97	N/A	OCT 97
IOC	APR 97	N/A	DEC 97
Reliability Maturation Program Review	DEC 99	N/A	AUG 00
Organic Spt for Depot Level of Repair	APR 00	N/A	DEC 00

b. (U) Previous Change Explanations --

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. Force Development Test and Experimentation Phase I is not required and was 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.

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Longbow Apache, December 31, 1994

9c. (U) Schedule (Cont'd):
Airframe Modifications

c. (U) Current Change Explanations --

(Ch-1) From Nov 94 to Dec 94 to reflect actual contract award date.

(Ch-2) From Nov 95 to Oct 95 to reflect Milestone III DAB meeting.

(Ch-3) From Jun 97 to Mar 97 to reflect delivery of the separate components (airframe and FCR) rather than the integrated aircraft.

(Ch-4) From Nov 97 to N/A because these milestones were deleted from the Acquisition Program Baseline dated 18 March 1994.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

Fire Control Mission Kit

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I In Process Review	AUG 85	AUG 85	AUG 85
Preliminary Design Contract Award	NOV 85	NOV 85	NOV 85
Contract Award (Proof of Principle)	AUG 86	AUG 86	AUG 86
Milestone IB DAB	JUL 89	JUL 89	JUL 89
IDP Contract Award	SEP 89	SEP 89	SEP 89
Development Test/Early User Test & Experimentation			
Start	FEB 90	FEB 90	FEB 90
Complete	APR 90	APR 90	APR 90
Milestone II/IV	DEC 90	DEC 90	DEC 90
Full Scale Development Award	DEC 90	DEC 90	DEC 90
Long Lead Time Items Contract Award	NOV 94	NOV 94	DEC 94 (Ch-1)
Lot 1 Contract Award	NOV 95	NOV 95	NOV 95
First Production Delivery	APR 96	JUN 97	MAR 97 (Ch-2)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) From Nov 94 to Dec 94 to reflect actual contract award date.

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Longbow Apache, December 31, 1994

9c. (U) Schedule (Cont'd):

Fire Control Mission Kit

(Ch-2) From Jun 97 to Mar 97 to reflect delivery of the separate components (airframe and FCR) rather than the integrated aircraft.

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

10. (U) Performance Characteristics:

Airframe Modifications

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated 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	
Alternate Mission Endurance with full fuel (hrs, sea level, standard)	2.5	N/A / N/A	N/A	N/A	
Ordnance Load (primary mission config)					
Hellfire (no.)	16	16 / 8	TBD	12	(Ch-1)
30mm Rounds (no.)	1200	1200 / 320	TBD	320	

(b)(1)

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LONGBOW APACHE, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

Airframe Modifications

	DE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
(b)(1)					
Maintainability (Mean Maint Hrs/Flt Hr)	7.6	N/A	/ N/A	TBD	7.6
Reliability (Mean Time Between Failure) (hrs)					
TADS	125	N/A	/ N/A	212.5	212.5
PNVS	219	N/A	/ N/A	390	390
Mission Reliability of AH-64D with Radar Kit (MTBF in Hours)	17	17	/ 15.3	TBD	17
System Reliability AH-64D with Radar Kit (MTBF in Hours)	3.9	3.9	/ 2.8	4.0	3.2
Operational Availability of AH-64D with Radar Kit Ao (%)	80	80	/ 75	TBD	80
Mean Time To Repair AH-64D w/o Radar Kit (hours)	1.5	1.5	/ 1.5	TBD	1.5
Max Mission Gross Weight (lbs)	16800	16530	/ 16900	TBD	16800
Mean Time Between Maint Actions With Fire Control Radar					
Scheduled	N/A	.87	/ .70	TBD	.87
Built-in-Test Effectiveness (fault detection % of Electronic Components)	95	N/A	/ N/A	TBD	95
Ferry Range - AH-64D w/o Radar Kit (nautical miles)	755	755	/ 740	TBD	755

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Longbow Apache, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

Airframe Modifications

The objective for Ordnance Load (primary mission configuration) refers to AH-64A goal. The Longbow primary mission configuration is 8 Longbow Hellfire missiles, and 320 30mm rounds.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) The number of Hellfire missiles is revised from 8 to 12 to match the key performance parameter threshold validated by the Joint Requirements Oversight Council.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

Fire Control Mission Kit

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------------------	-----------	---	------------------------------------	-----------------------------

(b)(1)

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Longbow Apache, December 31, 1994

10a. (U) Performance Characteristics (Cont'd):

Fire Control Mission Kit

DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
----	---	----------------------------------	----------------------------

(b)(1)

MTTK (HOURS)	0.5	0.5	0.7	TBD	.5
MTBF - System (Hours)	114	114	102	TBD	114

(b)(1)

b. (U) Previous Change Explanations --

(b)(1)

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(b)(1)

Parameters involving the AH-64A, the Radar Frequency Interferometer, and the Mean Time Between Maintenance Actions without the FCR were deleted from the APB dated 13 May 1993.

Parameters involving the Probabilities of Detection and Correct Classification were revised in the APB dated 13 May 1993.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

11. (U) Total Program Cost and Quantity (Current Estimate in Millions of Dollars):
Airframe Modifications

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	412.7	502.7	558.4
Procurement	3706.4	4196.6	4985.6
Flyaway	(2724.6)		(3723.3)
Other Weapon System	(722.3)		(1130.8)
Peculiar Support	(0.0)		(25.4)
Initial Spares	(259.5)		(106.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 91 Base-Year \$	4119.1	4699.3	5544.0
Escalation	1445.3	1438.3	2656.1
Development (RDT&E)	(18.8)	(22.0)	(32.7)
Procurement	(1426.5)	(1416.3)	(2623.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	5564.4	6137.6	8200.1

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Longbow Apache, December 31, 1994

11b. (U) Total Program Cost and Quantity (Cont'd):
Airframe Modifications

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>758</u>	<u>758</u>	<u>758</u>
Total	758	758	758

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 6 from the Current Estimate that are not considered fully configured.

The number of LRIP units approved at the Milestone II decision was 28 Longbow Apache AH-64D aircraft. That quantity was established based on affordability considerations and the Design to Unit Production Cost (DTUPC) goal; at that time, the DTUPC was determined solely from estimates. The current procurement quantities are determined based on actual cost data and funding constraints. The formal LRIP requirement was eliminated from the Longbow program upon approval of the Acquisition Program Baseline effective March 18, 1994.

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 March 8, 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

Fire Control Mission Kit

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	771.3	771.6	770.2
Procurement	497.6	553.9	574.3
Flyaway	(406.4)		(538.3)
Other Weapon System	(65.0)		(18.2)
Peculiar Support	(0.0)		(1.1)
Initial Spares	(26.2)		(16.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	1268.9	1325.5	1344.5

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Longbow Apache, December 31, 1994

11a. (U) Total Program Cost and Quantity (Cont'd):
Fire Control Mission Kit

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	173.6	116.7	165.2
Development (RDT&E)	(-0.5)	(-11.6)	(-8.4)
Procurement	(174.1)	(128.3)	(173.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1442.5	1442.2	1509.7

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>227</u>	<u>227</u>	<u>227</u>
Total	227	227	227

Note: Excludes 10 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

The number of LRIP units approved at the Milestone II decision was 28 Longbow Fire Control Radars. That quantity was established based on affordability considerations and the Design to Unit Production Cost (DTUPC) goal; at that time, the DTUPC was determined solely from estimates. The current procurement quantities are determined based on actual cost data and funding constraints. The formal LRIP requirement was eliminated from the Longbow program upon approval of the Acquisition Program Baseline effective March 18, 1994.

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 March 8, 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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Longbow Apache, December 31, 1994

12. (U) Unit Cost Summary:

Airframe Modifications

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	5544.0	4699.3	
(2) Quantity	758	758	
(3) Unit Cost	7.314	6.200	17.975
b. (U) Procurement			
(1) Cost (BY91\$)	4985.6	4196.6	
(2) Quantity	758	758	
(3) Unit Cost	6.577	5.536	18.801

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	8200.1	6137.6	
(2) Unit Cost	10.818	8.097	33.604
d. (U) Procurement			
(1) Cost (TY\$)	7609.0	5612.9	
(2) Unit Cost	10.038	7.405	35.563

e. (U) Changes from the Baseline Report - Not Applicable

f. (U) Changes from the Previous SAR (DEC 93 SAR) -

	<u>Changes in</u> <u>\$ or Qty</u>	<u>Percent</u> <u>Change</u>
(1) PAUC (BY91\$)	1.007	15.966
(2) PAUC (BY91\$)	0.980	17.509
(3) PAUC Quantity	0	0.000
(4) PAUC (TY\$)	1.961	22.141
(5) AUPC (TY\$)	1.931	23.819

g. (U) Initial SAR

(1) Program Acquisition Cost (BY\$) --	2626.3
(2) Program Acquisition Cost (TY\$) --	3170.7

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Longbow Apache, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

Airframe Modifications

The Initial SAR was Dec 90.

h. (U) Unit Cost Changes.

(1) (U) PAUC --

The Program Acquisition Unit Cost increase has two principal causes. The first unit cost was increased based on actual prototype costs from the Engineering and Manufacturing Development phase and the May 1994 program cost review by the Cost Analysis Improvement Group. The second cause is a programmatic change, created by a funding cap which limits the Longbow budget authority for fiscal years 1995 and beyond. As a result, the production rate is reduced (from 6 to 4 aircraft per month) and the program completion date is extended by three years (from 2009 to 2012).

(2) (U) AUPC --

The Average Unit Procurement Cost increase has two principal causes. The first unit cost was increased based on actual prototype costs from the Engineering and Manufacturing Development phase and the May 1994 program cost review by the Cost Analysis Improvement Group. The second cause is a programmatic change, created by a funding cap which limits the Longbow budget authority for fiscal years 1995 and beyond. As a result, the production rate is reduced (from 6 to 4 aircraft per month) and the program completion date is extended by three years (from 2009 to 2012).

i. (U) Impact of Performance or Schedule Changes on Unit Cost.

The program schedule was altered as a result of the budget authority limitation in FY 2002 and subsequent years. The production rate was reduced from 6 to 4 aircraft per month, and program completion was postponed from 2009 to 2012. These factors produced inefficiencies and delays that contributed to the breaches in Program Acquisition Unit Cost and the Average Procurement Unit Cost.

j. (U) Program Management and Control.

The Longbow Project Manager is COL Robert C. Atwell. The Deputy Project Manager is Mr. Gary Nenninger. The Acting Chief of the Business Management Division is Mr. William Redmond.

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Longbow Apache, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

Airframe Modifications

k. (U) Cost Control Actions.

The cost control actions for the current Engineering and Manufacturing Development (EMD) phase contracts include constant communications with the contractors and the Defense Plant Representative Offices and surveillance by on-site personnel at the contractor plants and test sites. The cost variances of the EMD contracts have stabilized as a result.

l. (U) Contract Information (In Millions of Then-Year Dollars) --

- (U) (1) Contractor(s): JOINT VENTURE MMC/WEC
(2) Contract Title: Longbow FCR FSD
(3) Contract Number: DAAJ09-91-C-0175
(4) Actual Cost of Work Performed (ACWP) to date: 277.7
(5) Percent contract completed (BCWP/target cost): 92.85
(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$-0.4/-0.70%	\$-3.4/-5.30%
Previous SAR	\$-2.6/-1.20%	\$-3.2/-1.47%
Current Values	\$-2.2/-0.79%	\$-2.0/-0.73%
Change from the Baseline Report	\$-1.8/-0.09%	\$+1.4/+4.57%
Change from the Previous SAR	\$+0.4/+0.41%	\$+1.2/+0.74%

(7) (U) Explanation of Variances. -

The primary causes of the variances are the Mast Mounted Assembly design change, fabrication difficulties, additional labor required for software development.

(8) (U) Impact of Variances on Contract. -

The variances are not expected to produce a breach of the contract cost baseline.

(9) (U) Impact of Variances on Unit Costs. -

The variances should not cause any additional unit cost breaches.

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Longbow Apache, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

Airframe Modifications

- (U) (1) Contractor(s): MCDONNELL DOUGLAS
(2) Contract Title: AH-64 Longbow Phase II
(3) Contract Number: DAAJ09-89-C-A086
(4) Actual Cost of Work Performed (ACWP) to date: 373.8
(5) Percent contract completed (BCWP/target cost): 85.00
(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$-7.0/-5.30%	\$-5.5/-4.00%
Previous SAR	\$-31.0/-10.56%	\$-8.7/-3.06%
Current Values	\$-29.4/-8.54%	\$-8.9/-2.52%
Change from the Baseline Report	\$-22.4/-3.24%	\$-3.4/+1.48%
Change from the Previous SAR	\$+1.6/+2.02%	\$-0.2/+0.54%

- (7) (U) Explanation of Variances. -

The cumulative cost variance is the result of the level of design complexity, increased drawing count, and the expenditure of resources to support a very aggressive schedule recovery. The cumulative schedule variance is caused by the delayed receipt of subcontractor components.

- (8) (U) Impact of Variances on Contract. -

The variances are not expected to produce any additional breaches to the contract cost baseline.

- (9) (U) Impact of Variances on Unit Costs. -

The variances should not cause any additional unit cost breaches.
12m. DAAJ09-89-C-A086 breached the contract cost baseline by 234%.

- m. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

Fire Control Mission Kit

	<u>Current</u> <u>Estimate</u> (DEC 94 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	1344.5	1325.5	
(2) Quantity	227	227	
(3) Unit Cost	5.923	5.839	1.433

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Longbow Apache, December 31, 1994

12. (U) Unit Cost Summary (Cont'd):

Fire Control Mission Kit

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY91\$)	574.3	553.9	
(2) Quantity	227	227	
(3) Unit Cost	2.530	2.440	3.683

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LONGBOW APACHE, December 31, 1994

13. (U) Cost Variance Analysis:
Airframe Modifications

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	431.5	5132.9	0.0	5564.4
Previous Changes:				
Economic	-3.4	+315.2	-	+311.8
Quantity	-	-	-	-
Schedule	-	-1.1	-	-1.1
Engineering	-	-	-	-
Estimating	+140.1	+559.7	-	+699.8
Other	-	-	-	-
Support	-	+138.8	-	+138.8
Subtotal	+136.7	+1012.6	-	+1149.3
Current Changes:				
Economic	-1.0	-21.7	-	-22.7
Quantity	-	-	-	-
Schedule	-	425.9	-	+425.9
Engineering	-	-	-	-
Estimating	23.9	742.8	-	+766.7
Other	-	-	-	-
Support	-	316.5	-	+316.5
Subtotal	+22.9	+1463.5	-	+1486.4
Total Changes	+159.6	+2476.1	-	+2635.7
Current Estimate	591.1	7609.0	-	8200.1

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Longbow Apache, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
Airframe Modifications

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	412.7	3706.4	0.0	4119.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+125.5	+415.4	-	+540.9
Other	-	-	-	-
Support	-	+121.0	-	+121.0
Subtotal	+125.5	+536.4	-	+661.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	129.9	-	+129.9
Engineering	-	-	-	-
Estimating	20.2	453.4	-	+473.6
Other	-	-	-	-
Support	-	159.5	-	+159.5
Subtotal	+20.2	+742.8	-	+763.0
Total Changes	+145.7	+1279.2	-	+1424.9
Current Estimate	558.4	4985.6	-	5544.0

(U) Previous Change Explanations --

RD&E

Economic: Revised escalation indices
Estimating: Realign all prior changes to Airframe Modifications and item. Increased scope for training/simulator development, matrix support, production engineering, test demonstration, reliability data growth testing, and functional configuration audit.

Procurement

Economic: Revised escalation indices and economic adjustment for negative program change.
Schedule: Change in annual procurement buy profile.

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Longbow Apache, December 31, 1994

13b. (U) Cost Variance Analysis (Cont'd):

Airframe Modifications

Estimating: Realign prior changes to Airframe Modifications and item. Revised estimate for launchers, GFE, tooling, ECOs, and hardware; change in learning curve methodology for premodification; adjustment to reconcile flyaway and support (system program management).

Support: Realign prior changes to Airframe Modifications and item. Change in method of estimating initial spares; increase in required peculiar ground support equipment; reduced data requirements after FY 2000; increase new equip training costs; addition of first destination transportation, post deployment software support, and contractor logistics support.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-1.0
Adjustment for Current & Prior Inflation. (Estimating)	+0.9	+1.0
Decrement to FY 95 funding, creating unfavorable impact on Longbow Crew Trainer development, Functional Configuration Audit, and completion of supplier qualification. (Estimating)	-14.1	-16.0
Addition of Tactical Engagement Simulation System (TESS) (Estimating)	+15.6	+18.4
Addition of OPTEC funds to support Initial Operational Test and Evaluation (Estimating)	+20.9	+23.8
Reprogrammed to Aviation Electronic Combat Project Manager's Office (Estimating)	-0.8	-0.9
Small Business Innovative Research (Estimating)	-2.3	-2.4
RD&E Subtotal	<u>+20.2</u>	<u>+22.9</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-21.7
Adjustment for Current & Prior Inflation. (Estimating)	+0.3	+0.3

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Longbow Apache, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):
Airframe Modifications

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in annual procurement buy profile adding four years as a result of rate reduction from 6 to 4 aircraft per month. (Schedule)	+129.9	+425.9
Increased first unit cost to reflect Engineering and Manufacturing Development prototype actual costs. (Estimating)	+424.2	+689.9
FY 95 funding decrement with negative impact on Long Lead items, GFE avionics, and production schedule. (Estimating)	-14.0	-16.3
Increased estimate for launchers (Estimating)	+42.9	+68.9
Adjustment for Current & Prior Inflation. (Support)	+0.1	+0.1
Revised estimate for Initial Spares (Support)	+0.2	+3.2
Revised estimate for Peculiar Support Equipment (Support)	--	-0.8
Added four years of support costs for data, contract logistics support, and matrix support due to schedule change. (Support)	+168.0	+324.3
FY95 funding decrement reduced engine buy from 46 to 31, properly charged to support (Support)	-8.8	-10.3
Procurement Subtotal	<u>+742.8</u>	<u>+1463.5</u>

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Longbow Apache, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
Fire Control Mission Kit

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	770.8	671.7	0.0	1442.5
Previous Changes:				
Economic	-8.4	-28.8	-	-37.2
Quantity	-	-	-	-
Schedule	-	+10.4	-	+10.4
Engineering	-	-	-	-
Estimating	+5.8	+146.3	-	+152.1
Other	-	-	-	-
Support	-	-69.7	-	-69.7
Subtotal	-2.6	+58.2	-	+55.6
Current Changes:				
Economic	-0.2	-2.6	-	-2.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-6.2	20.7	-	+14.5
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	-6.4	+18.0	-	+11.6
Total Changes	-9.0	+76.2	-	+67.2
Current Estimate	761.8	747.9	-	1509.7

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LONGBOW APACHE, December 31, 1994

13a. (U) Cost Variance Analysis (Cont'd):
Fire Control Mission Kit

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	771.3	497.6	0.0	1268.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+2.8	-	+2.8
Engineering	-	-	-	-
Estimating	+4.8	+113.8	-	+118.6
Other	-	-	-	-
Support	-	-55.1	-	-55.1
Subtotal	+4.8	+61.5	-	+66.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.9	15.3	-	+9.4
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	-5.9	+15.2	-	+9.3
Total Changes	-1.1	+76.7	-	+75.6
Current Estimate	770.2	574.3	-	1344.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices

Estimating: Adjustment for current and prior inflation, and refining the estimate

Procurement

Economic: Revised escalation indices and adjustment for negative program change.

Schedule: Change in annual procurement buy schedule.

Estimating: Increases in Contractor System Program Management requirements, Design to Unit Production First Unit Cost, nonrecurring requirements including tooling,

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13b. (U) Cost Variance Analysis (Cont'd):

Fire Control Mission Kit

and recurring hardware.
Support: Realign support costs: all training devices and support costs associated with quantity change moved to Airframe Modifications and item. Increase in Initial Spares requirements due to increase in recurring hardware costs. Increase in data requirements. Revised estimating methodology for initial spares.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
FY 95 funding decrement causing failure to complete component qualification and DAB-directed Test, Analyze, and Fix (TAAF) effort. (Estimating)	-3.5	-3.7
Reprogrammed to Aviation Electronic Combat Project Manager's Office (Estimating)	-1.4	-1.5
Small Business Innovative Research (Estimating)	-1.2	-1.2
RD&E Subtotal	-5.9	-6.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2.6
Adjustment for Current & Prior Inflation. (Estimating)	+0.2	+0.2
FY 95 funding decrement, causing delays to tooling and test equipment, composite manufacturing initiatives, and essential engineering change requirements. (Estimating)	-9.4	-11.0
Increase in first unit cost to reflect Engineering and Manufacturing Development prototype actual costs. (Estimating)	+24.5	+31.5

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Longbow Apache, December 31, 1994

13c. (U) Cost Variance Analysis (Cont'd):

Fire Control Mission Kit

(Dollars in Millions)

Base-Year Then-Year

Revised estimate for Other Weapons
Systems (Support)

-0.1 -0.1

Procurement Subtotal

+15.2 +18.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Airframe Modifications

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes							PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	
7.341	0.381	--	0.560	--	1.935	--	0.601	10.818

Fire Control Mission Kit

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes							PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	
6.355	-0.176	-0.001	0.046	--	0.734	--	-0.307	6.651

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

Target Ceiling Qty
\$326.2 N/A 0

Estimated Price At Completion

Contractor Program Manager
\$325.2 \$326.2

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15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.6	\$-3.2
Cumulative Variances To Date (12/31/94)	<u>\$-2.2</u>	<u>\$-2.0</u>
Net Change	\$0.4	\$1.2

Explanation of Change:

Changes are insignificant.

(U) <u>AH-64 Longbow Phase II:</u> McDonnell Douglas, Mesa, AZ DAAJ09-89-C-A086, CPlF Award: August 30, 1989 Definitized: August 30, 1989	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$194.7	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$371.5	N/A	0	\$450.4	\$455.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-31.0	\$-8.7
Cumulative Variances To Date (12/25/94)	<u>\$-29.4</u>	<u>\$-8.9</u>
Net Change	\$1.6	\$-0.2

Explanation of Change:

Contract trends have stabilized; both cost and schedule variances showed slight improvements over the past year.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 39.3% (11 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 14.5% (\$1404.6 / \$9709.8)

Airframe Modifications

- (1) Percent Program Completed: 32.0% (8 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 7.5% (\$611.5 / \$8200.1)

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Longbow Apache, December 31, 1994

Fire Control Mission Kit

(1) Percent Program Completed: 57.9% (11 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 52.5% (\$793.1 / \$1509.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program <u>Appropriation</u>	<u>Prior Years</u> (FY85-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2012)	<u>Total</u>
RDT&E	1325.2	23.6	4.1	-	1352.9
Procurement	79.4	354.9	409.7	7512.9	8356.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1404.6	378.5	413.8	7512.9	9709.8

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Airframe Modifications <u>Appropriation</u>	<u>Prior Years</u> (FY88-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2012)	<u>Total</u>
RDT&E	563.4	23.6	4.1	-	591.1
Procurement	48.1	270.2	306.7	6984.0	7609.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	611.5	293.8	310.8	6984.0	8200.1

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16b. (U) Program Funding Summary (Cont'd):
Fire Control Mission Kit

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Fire Control Mission Kit					
<u>Appropriation</u>	<u>Prior Years</u> (FY85-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2003)	<u>Total</u>
RD&E	761.8	-	-	-	761.8
Procurement	31.3	84.7	103.0	528.9	747.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	793.1	84.7	103.0	528.9	1509.7

c. (U) Annual Summary -- Airframe Modifications

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

1988				20.5	18.7	18.6	17.1	3.0
1989				49.4	47.0	47.0	46.1	4.2
1990				69.8	68.9	68.9	68.3	4.1
1991				55.5	56.8	56.8	56.7	4.3
1992				69.7	73.2	73.2	73.0	3.0
1993				93.6	100.9	100.9	100.2	2.7
1994				77.9	85.9	85.3	72.4	2.0
1995				98.5	112.0	29.4	1.0	2.7

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16c. (U) Program Funding Summary (Cont'd):
Airframe Modifications

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1996				20.1	23.6			3.0
1997				3.4	4.1			3.0
Subtot				558.4	591.1	480.1	434.8	

Expenditures and obligations are as of 01/16/95.

Appropriation: 2031 Aircraft Procurement, Army

1995		16.3		41.2	48.1	43.6		2.7
1996	18	9.8	167.2	224.7	270.2			3.0
1997	26	6.1	171.2	247.7	306.7			3.0
1998	37	1.0	212.8	274.2	349.8			3.0
1999	48	3.8	248.0	335.4	440.7			3.0
2000	53	1.5	259.3	382.6	517.7			3.0
2001	52	5.5	247.6	347.8	484.7			3.0
2002	48	1.2	227.2	313.5	450.1			3.0
2003	50	5.2	231.3	317.5	469.5			3.0
2004	52	1.2	235.7	314.5	479.0			3.0
2005	54	1.2	240.0	307.8	482.8			3.0
2006	54		238.2	301.6	487.3			3.0

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16c. (U) Program Funding Summary (Cont'd):
Airframe Modifications

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

2007	48		213.6	282.7	470.4			3.0
2008	48		211.5	274.4	470.4			3.0
2009	47		206.1	266.4	470.4			3.0
2010	46		201.2	258.7	470.4			3.0
2011	44		192.7	251.1	470.4			3.0
2012	33		166.9	243.8	470.4			3.0
Subtot	758	52.8	3670.5	4985.6	7609.0	43.6		
Grand Total	758	52.8	3670.5	5544.0	8200.1	523.7	434.8	

c. (U) Annual Summary -- Fire Control Mission Kit

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1985				17.8	14.7	14.7	14.7	3.4
1986				35.5	30.2	30.2	30.2	2.8
1987				88.4	77.6	77.6	77.6	2.7

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Longbow Apache, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
Fire Control Mission Kit

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)

1988				90.8	83.0	83.0	83.0	3.0
1989				90.1	85.6	85.5	85.0	4.2
1990				94.8	93.5	93.5	92.9	4.1
1991				77.1	79.0	79.0	78.6	4.3
1992				73.3	77.0	77.0	76.8	3.0
1993				110.3	118.9	118.9	116.9	2.7
1994				72.3	79.8	79.7	55.5	2.0
1995				19.8	22.5	4.6	0.4	2.7
Subtot				770.2	761.8	743.7	711.6	

Expenditures and obligations are as of 01/16/95.

Appropriation: 2031 Aircraft Procurement, Army

1995		14.0		26.8	31.3	31.0		2.7
1996	13	18.7	57.7	70.4	84.7			3.0
1997	24	3.6	72.3	83.2	103.0			3.0
1998	34	3.6	78.9	86.5	110.3			3.0
1999	44	2.6	90.1	96.5	126.8			3.0
2000	48		88.2	91.7	124.1			3.0

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Longbow Apache, December 31, 1994

16c. (U) Program Funding Summary (Cont'd):
Fire Control Mission Kit

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)

2001	49		83.8	86.9	121.1			3.0
2002	15		24.8	27.8	39.9			3.0
2003				4.5	6.7			3.0
Subtot	227	42.5	495.8	574.3	747.9	31.0		
Grand Total	227	42.5	495.8	1344.5	1509.7	774.7	711.6	

17. (U) Production Rate Data:

Airframe Modifications

a. (U) Deliveries (Plan/Actual) -- None.

b. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 758 - @ Peak Rate: 6.0/mo			
FY 91 Base-Year \$	2.532	3.059	0.000
Then Year \$	3.381	4.676	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 91 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

The Longbow Program has a Design to Unit Production Cost (DTUPC) goal for Airframe Modifications, but does not have an approved threshold. The DTUPC goal includes prime contractor recurring manufacturing (materiel and labor). It excludes Government Furnished Equipment, Initial Production Facilities, System Test and Evaluation, and System Program Management costs included as flyaway costs. The DTUPC goal

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Longbow Apache, December 31, 1994

17b. (U) Production Rate Data (Cont'd):

Airframe Modifications

is established only for the total production quantity of 758 and does not apply at any reduced portion or early lot quantities.

Fire Control Mission Kit

a. (U) Deliveries (Plan/Actual) -- None.

b. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development	Current	Latest Approved
	<u>Estimate</u>	<u>Estimate</u>	<u>Threshold</u>
@ Qty 227 - @ Peak Rate: 4.0/mo			
FY 91 Base-Year \$	1.440	1.520	0.000
Then Year \$	1.780	2.008	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 91 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

The Longbow Program has a Design to Unit Production Cost (DTUPC) goal for the Fire Control Radar, but does not have an approved threshold. The DTUPC goal includes prime contractor recurring manufacturing (materiel and labor). It excludes Government Furnished Equipment, Initial Production Facilities, System Test and Evaluation, and System Program Management costs included as flyaway costs. The DTUPC Goal is established only for the total production quantity of 227 and does not apply at any reduced portion or early lot quantities.

18. (U) Operating and Support Costs:

Airframe Modifications

a. (U) Assumptions and Ground Rules --

Assumes 616 fielded aircraft each flying 14.5 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: Army Cost Position (May 1994). The Longbow aircraft system has no antecedent.

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18b. (U) Operating and Support Costs (Cont'd):
Airframe Modifications

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Longbow aircraft	Avg Annual Cost Per antecedent system
Replenishment	480.5	N/A
Depot Maintenance	15.7	N/A
Military Personnel	497.6	N/A
Other	86.2	N/A
Total	1080.0	N/A

c. (U) Contractor Support Costs -- None.

Fire Control Mission Kit

a. (U) Assumptions and Ground Rules --

Assumes 196 fielded Fire Control Radars each flying 14.5 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. At maturity (50,000 flight hours), the Fire Control Radar Mean Time Between Failure (MTBF) goal is 150 hours. Source: Army Cost Position (May 1994). The Longbow Fire Control Radar system has no antecedent.

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LONGBOW APACHE, December 31, 1994

18b. (U) Operating and Support Costs (Cont'd):
Fire Control Mission Kit

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Fire Control Radar	Avg Annual Cost Per antecedent system
Replenishment	24.1	N/A
Depot Maintenance	5.1	N/A
Other	0.2	N/A
Total	29.4	N/A

c. (U) Contractor Support Costs -- None.

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A-7 AVENGER

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: AVENGER

AS OF DATE: December 31, 1994

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD/P&I)
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:

FAAD PROJECT OFFICE	COL DANIEL M. PRESCOTT
SFAE-MSL-PAD	Assigned: May 27, 1993
REDSTONE ARS, AL 35898-5630	AV 746-4927 COMM (205) 876-4927

4. Program Elements/Procurement Line Items:

RDTEE:

PE 64306A (Shared) Project D646
PE 23801A (Shared) Project D038

PROCUREMENT:

APPN 2032 ICN C14900 (Army) (Superseded C9803)
APPN 2032 ICN CA0260 (Army)
APPN 2032 ICN CE8710 (Army)

5. Related Programs:

Non-Line of Sight; Forward Area Air Defense Command, Control, and Intelligence; STINGER Reprogrammable Microprocessor.

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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 coverage in the division area and permits the enemy no preferred attack option. The FAADS Line of Sight-Rear (LOS-R) component is AVENGER, 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 man machine interface provides maximum STINGER missile operational effectiveness in the threat environment. The AVENGER fire unit 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 August 1987. 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 March 1988 for 39 fire units. The US Army Missile Command (MCOM) 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) IIIB in April 1990 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 the 1st fire unit delivery. 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

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7a. Program Highlights (Cont'd):

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. Boeing "ramp-up" in production was achieved in September 1991. Normal monthly delivery rates were established and remain at 12 per month. The FY 1991-95 multiyear contract for 679 fire units (600 Army/79 USMC) was awarded February 20, 1992. Program year three of the FY 1991-95 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 Mechanized (MX) (1-5 Air Defense Artillery (ADA)) and 1-2 ADA (18th Airborne (ABN) Corps), Ft. Stewart, GA, were completed as of December 31, 1992. The program acquisition cost decreased \$960.7M TY (\$634.1M BY) due primarily to a reduction in fire unit quantity by 778, from 1779 to 1001. The current estimate for FUEs was changed due to re-prioritization of the force structure as directed by Department of the Army (DA) Deputy Chief of Staff for Operations and Plans (DCSOPS). FUE-USAREUR changed from February 1991 to July 1993 and from July 1993 to June 1994. FUE-WESTCOM changed from April 1996 to June 1995; FUE-ARNG changed from August 1996 to December 1995. FUEs USAREUR, WESTCOM, and ARNG were later deleted from the approved Acquisition Program Baseline by Change 1, dated February 1991.

Fire unit deliveries were ahead of schedule as of December 31, 1993 with a total of 475 fire units delivered. Fielding to the 7th Infantry Division (ID) (2-62 ADA), Ft. Ord, CA, was completed in the 2nd quarter of FY 93. Fielding to the 101st Airborne, Ft. Campbell, KY, was completed in the 3rd quarter of FY 93. Fielding to 31st ADA Brigade (BDE) (2-2 ADA), Ft. Hood, TX, was completed 1st quarter FY 94. The FY 94 President's Budget (PB) decreased the procurement quantity from 1779 to 1001, as a result the average unit procurement cost increased by more than 15 percent, causing a threshold breach in the Acquisition Program Baseline (APB). A Program Deviation and request for APB change was approved by the Army Acquisition Executive on September 13, 1993. The revised APB includes all funding for the AVENGER program (RDT&E, production and modification funds). The FY 95 President's Budget did not fund the last year of the multiyear contract and reduced the quantity of fire units to be procured by 228, from 1001 to 773. The program acquisition cost decreased \$235.4M. Testing on the 0.50 caliber machinegun was completed and deliveries began in December 1993.

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7a. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --
In January and February of 1994, 31 fire units were delivered bringing the total quantity delivered to 506 fire units. Fielding to the 2nd Armored Cavalry Regiment (ACR), Ft. Polk, LA, was completed in January 1994. Machinegun fielding began in November 1994. Fire unit delivery continues ahead of schedule with a total of 629 delivered as of December 31, 1994. Fielding to 5-2 Air Defense Artillery (ADA), 1st Armored Regiment (AR), and 3rd Mechanized (MX) was completed as of 1st quarter 1995. Ninety nine of the 773 fire units to be procured by the Army will be redirected to the U.S Marine Corps. Congress agreed to extend the five-year multiyear contract by one year to allow additional time for other customers to procure the balance of the multiyear contract quantity, 93 fire units. A production contract for the procurement of Environmental Control Unit/Prime Power Units (ECU/PPUs) was awarded 3rd quarter 1994. Testing of the first article ECU/PPU is currently underway. A Memorandum of Agreement (MOA) with Letterkenny Army Depot for the HMMWV retrofit program was initiated 3rd quarter 1994.

The AVENGER is expected to satisfy mission requirements.

c. Changes Since As Of Date --
Since 31 December 94 six fire units have been delivered bringing the total quantity delivered to 635 fire units.

8. Threshold Breaches:

There are currently no breaches to the approved Acquisition Program Baseline (APB) dated September 13, 1993, and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
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	APR 87	APR 87	APR 87
Urgent (LPU)			

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
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
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	SEP 95(Ch-1)
FUE-ARNG	AUG 96	N/A	DEC 95
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 accommodate 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 accommodate completion of operational and technical tests. Contract Award -

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9b. Schedule (Cont'd):

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 (FY 91) 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 to reflect the revised fielding schedule. First Unit Equipped (FUE) EUSA changed from June 1992 to September 1991 due to HQDA directed changes in sequencing of the deployment schedule. Updated FUE-USAREUR from February 1991 to October 1992, from October 1992 to July 1993, and from July 1993 to June 1994 due to prioritization of the force structure as directed by Department of the Army (DA) Deputy Chief of Staff for Operations and Plans (DCSOPS). Updated FUE-WESTCOM from April 1996 to November 1995 and from November 1995 to June 1995 and FUE-ARNG changed from August 1996 to February 1995 and from February 1995 to December 1995 due to prioritization of the force structure by DA DCSOPS. FUE milestones for USAREUR, WESTCOM, and ARNG were later deleted from the approved Acquisition Program Baseline by Change 1, dated February 1991. 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) Updated FUE-WESTCOM from June 1995 to September 1995 due to prioritization of the force structure by DA DCSOPS.

d. References --

Production Estimate:

DAE Approved Acquisition Program Baseline dated March 2, 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated September 13, 1993.

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10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold		Demon- strated Perf	Current Estimate
Number of STINGER Missiles	4	8	/ 4	8	8
Range of predicted fire weapons (km) (Gun only)	1.5	4	/ 1.5	1.5	1.5
Fire unit full reload time (DAY, MOPP O) (min)	15	15	/ 15	15	15
FLIR detection range Under standard 23km meteorological visibility					
Fixed Wing (km)	10	10	/ 10	10	10
Rotary Wing (km)	7	7	/ 7	7	7
Climatic operating range (deg F) (includes solar radiation)	-25 to 140	-25 to 140	/ -25 to 140	-25 to 140	-25 to 140
Remote Operation (M)	50	50	/ 50	50	50
Laser Range Finder					
Min Range (km)	.5	.5	/ .5	.4	.4
Max Range (km)	10	10	/ 10	10	10
Fire Unit					
Operational Availability (Ao) with ALDT of 7 hrs	.71	.71	/ .71	.94	.91
MTBOMF (hrs)	45	45	/ 45	117	102
MTTR ORG (hrs)	1.5	1.5	/ 1.5	.4	1.20
MTTR above ORG (hrs)	3	3	/ 3	3	1.76
Weapon Subsystem					
Operational Availability (Ao) with ALDT of 7 hrs	.89	.89	/ .89	.90	.89
MTBOMF (hrs)	54	54	/ 54	176	131
MTTR ORG (hrs)	1.5	1.5	/ 1.5	.37	1.13
MTTR above ORG (hrs)	3	3	/ 3	3	1.76

The STINGER missile must be capable of being fired both in MANPADS and AVENGER configuration. STINGER missile performance must not be degraded in either configuration.

Acronyms

ALDT = Administrative and Logistics Down Time

MTBOMF = Mean Time Between Operational Mission Failures

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10a. Performance Characteristics (Cont'd):

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 for the weapon subsystem from 1.5 hrs to .40 hrs, and MTTR ORG changed for the fire unit from 1.5 hrs to .37 hrs to reflect demonstrated performance. Ao changed from 0.71 to 0.83, demonstrated MTBOMF changed for the fire unit from 31 to 120 and for the weapon subsystem from 57 to 176, current MTBOMF changed for the fire unit from 45 to >45 and for the weapon subsystem from 54 to >54 based on the most recent test data. Min range for the Laser Range Finder changed from .5 to .4 based on PQT. Based upon sample data collection, MTTR above ORG changed for the fire unit from 3 to 1.76 and MTTR above ORG changed for the weapon subsystem from 3 to 1.76. Ao changed for the fire unit from 0.83 to 0.91 based on PQT. Based upon sample data collection, MTBOMF changed for the the fire unit from >45 to 102; MTTR ORG changed for the fire unit from .4 to 1.20; MTBOMF changed for the weapon subsystem from >54 to 131; MTTR ORG changed for the weapon subsystem from .37 to 1.13.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

DAE Approved Acquisition Program Baseline dated March 2, 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated September 13, 1993.

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	43.8	38.1
Procurement	1089.8	1139.2	878.6
Flyaway	(887.3)		(717.3)
Other Weapon Systems	(124.7)		(72.5)
Peculiar Support	(0.0)		(33.2)
Initial Spares	(77.8)		(55.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 89 Base-Year \$	1103.1	1183.0	916.7

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11a. Total Program Cost and Quantity (Cont'd):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	163.6	205.8	138.1
Development (RDT&E)	(-0.5)	(5.6)	(4.4)
Procurement	(164.1)	(200.2)	(133.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1266.7	1388.8	1054.8

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>1207</u>	<u>1001</u>	<u>773</u>
Total	1207	1001	773

Quantity is in fire units, each fire unit consists of a HMMWV, two launchers, and a turret assembly.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

DAE Approved Acquisition Program Baseline dated March 2, 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated September 13, 1993.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 94 SAR)	<u>UCR Baseline</u> (SEP 93 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (FY89\$)	916.7	1183.0	
(2) Quantity	773	1001	
(3) Unit Cost	1.186	1.182	0.345

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12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY89\$)	878.6	1139.2	
(2) Quantity	773	1001	
(3) Unit Cost	1.137	1.138	-0.128

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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	-	-2.6	-	-2.6
Quantity	-	-379.2	-	-379.2
Schedule	-	+8.2	-	+8.2
Engineering	+12.6	+63.1	-	+75.7
Estimating	+13.8	+98.0	-	+111.8
Other	-	-	-	-
Support	-	-45.2	-	-45.2
Subtotal	+26.4	-257.7	-	-231.3
Current Changes:				
Economic	-	-2.9	-	-2.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	3.3	3.0	-	+6.3
Other	-	-	-	-
Support	-	16.0	-	+16.0
Subtotal	+3.3	+16.1	-	+19.4
Total Changes	+29.7	-241.6	-	-211.9
Current Estimate	42.5	1012.3	-	1054.8

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	13.3	1089.8	0.0	1103.1
Previous Changes:				
Quantity	-	-301.3	-	-301.3
Schedule	-	-2.5	-	-2.5
Engineering	+10.2	+50.6	-	+60.8
Estimating	+11.6	+80.7	-	+92.3
Other	-	-	-	-
Support	-	-53.3	-	-53.3
Subtotal	+21.8	-225.8	-	-204.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	3.0	2.5	-	+5.5
Other	-	-	-	-
Support	-	12.1	-	+12.1
Subtotal	+3.0	+14.6	-	+17.6
Total Changes	+24.8	-211.2	-	-186.4
Current Estimate	38.1	878.6	-	916.7

b. Previous Change Explanations --

RDTEE

Engineering: Addition of P3I retrofit program.

Estimating: Study STINGER Adjunct/Complementary Missile and perform live fire tests.

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Quantity: Increase of 572 fire units. Decrease of 778 fire units. Decrease of 228 fire units.

Schedule: Re-scheduled buy quantity. 28 FUs moved to outyears: 18 FUs moved from FY 95 to FY 00. Allocation associated with quantity decrease.

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13b. Cost Variance Analysis (Cont'd):

Engineering: P3I cut-in (ECU/PPU, C2I, and others). ECU/PPU retrofit added to approved program. HMMWV retrofit added to approved program.

Estimating: HMMWV procurement transferred to AVENGER line. PMO salaries changed from OMA to MIPA. Refined fire unit estimate. Corrected miscategorization in prior SAR. Refined fire unit estimate incorporates MY contract data, MY strategy for FY 1996 - 00. Dual source SVML strategy. Revised HMMWV estimate for TACOM. Revised procurement support estimate: change from a product office to a project office. Refined estimate for engineering support of production. Refined ECO estimate. Adjustment for current and prior inflation. Allocation of estimating variance associated with quantity decrease. Revised procurement strategy (competitive SVML, delete 2nd MYP). Refinement of ECO, in-house requirements. Increased cost of long lead materials. Revised HMMWV estimate based on a revised unit price. Revised SVML estimate based on winner-take-all competition. Refined cost due to quantity decrease of 228 fire units.

Support: Total Package Fielding (TPF) transferred to AVENGER line. Added initial spares, training equipment, GFE to support additional 572 fire units. Corrected miscategorization in previous SAR. Refined estimate for revised training/support equipment requirements. Refined TPF estimate, extension beyond FY 97. Revised initial spares requirement, based on refined failure factors. Decrease TPF for reduction of 778 fire units. Decrease training/support equipment for reduction of 778 fire units. Decrease initial spares for reduction of 778 fire units. Adjustment for current and prior inflation. Refinement of training/support equipment estimate. Refinement of initial spares estimate. Revised Other Weapon Systems cost (Training Equipment, Peculiar Support Equipment, Depot Maintenance Equipment, Data, and Fielding) due to quantity decrease of 228 fire units. Revised Peculiar Support cost due to quantity decrease of 228 fire units. Revised Initial Spares cost due to quantity decrease of 228 fire units.

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13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	--
Increased funding to continue operational testing and evaluation of the ground-to-air Starstreak missile. (Estimating)	+6.4	+7.9
Reduced funding associated with software simulations and upgrades. (Estimating)	-3.4	-4.6
RDTE Subtotal	<u>+3.0</u>	<u>+3.3</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2.9
Adjustment for Current & Prior Inflation. (Estimating)	+2.0	+2.3
Refined in-house estimate for increased Government Engineering requirements. (Estimating)	+0.5	+0.7
Adjustment for Current & Prior Inflation. (Support)	+0.4	+0.4
Refined estimate for other weapon systems requirements (Training devices, Depot Maintenance Plant Equipment, and Fielding). (Support)	+10.6	+14.2
Refined estimate for peculiar support equipment. (Support)	+6.1	+7.5
Refined estimate for initial spares. (Support)	-5.0	-6.1
Procurement Subtotal	<u>+14.6</u>	<u>+16.1</u>

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.049	-0.007	0.099	0.011	0.098	0.153	--	-0.038	0.316	1.365

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --		Initial Contract Price		
PMS NDI WEAPON SYST:		Target	Ceiling	Qty
BOEING AEROSPACE COMPANY, HUNTSVILLE, AL				
DAAH01-92-C-0023, FFP		\$54.0	N/A	18
Award: October 4, 1991				
Definitized: February 20, 1992				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$431.9	N/A	679	\$431.9	\$431.9

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: 83.3% (10 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 96.3% (\$1015.5 / \$1054.8)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	42.5	-	-	-	42.5
Procurement	973.0	32.5	6.8	-	1012.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1015.5	32.5	6.8	-	1054.8

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1986				4.5	4.2	4.2	4.2	2.8
1987				2.8	2.7	2.7	2.5	2.7
1988				5.9	5.9	5.9	5.9	3.0
1989								4.2
1990								4.1
1991								4.3
1992				2.1	2.4	2.4	2.4	3.0
1993				9.6	11.2	11.2	7.0	2.7
1994				6.8	8.2	4.1	2.2	2.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligat- ed	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1995				6.4	7.9	0.4		2.7
Subtot				38.1	42.5	30.9	24.2	

Appropriation: 2032 Missile Procurement, Army

1987	20	4.1	30.7	41.5	41.2	36.9	36.4	2.7
1988	39	1.3	39.0	62.3	64.1	45.3	44.8	3.0
1989	88	1.4	75.2	91.7	98.8	98.8	91.4	4.2
1990	106	1.9	87.6	109.5	121.9	118.7	115.6	4.1
1991	88		75.9	103.3	117.9	117.9	116.5	4.3
1992	144		123.8	157.0	183.7	183.5	147.4	3.0
1993	144		155.0	135.6	162.7	146.1	97.3	2.7
1994	144		121.4	124.6	153.6	83.6	25.8	2.0
1995				22.9	29.1	1.7		2.7
1996				25.1	32.5			3.0
1997				5.1	6.8			3.0
Subtot	773	8.7	708.6	878.6	1012.3	832.5	675.2	
Grand Total	773	8.7	708.6	916.7	1054.8	863.4	699.4	

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16c. Program Funding Summary (Cont'd):

Expenditures and obligations as of January 20, 1995.

17. Production Rate Data:

a. Deliveries (Plan/Actual) --

	<u>To Date</u>
RD&E	0/0
Procurement	617/635

b. 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 674 AVENGER (LOS-R) fire units including training base, floats and spares. OPTEMPO is 1481 kilometers per year. Twenty full-up years are costed for the fire units. Military personnel costs include 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, project management and modification kits. AVENGER has no antecedent system. However, AVENGER will in some Army units replace CHAPARRAL and VULCAN. The December 30, 1993 Project Office Estimate (POE) was utilized as the source for Operating and Support costs.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per AVENGER Fire Unit	Avg Annual Cost Per Antecedent Unit
Personnel	134.9	N/A
O&S Consumables	0.9	N/A
Direct Depot Maint.	15.4	N/A
Sustaining Investment	34.4	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	0.2	N/A
Total	185.8	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Depot Maintenance	2.6	7.3	3.9	27.9	41.7
Other	3.0	---	---	---	3.0
Total	5.6	7.3	3.9	27.9	44.7

Depot Maintenance: Provides for repair and overhaul of system.

Other: Provides new equipment training team (NETT) training for operator and maintenance courses.

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